PESTICIDES AND PCBS IN THE NORTH SASKATCHEWAN RIVER AND RED DEER RIVER

Alberta Environmental Centre

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ABSTRACT

The purpose of this study was to describe the concentrations of pesticides and PCBs in fish collected between 1980 and 1982 from the North Saskatchewan River and the Red Deer River. Approximately 500 fish, mainly pike, walleye, sauger, goldeye and suckers, were collected. Determinations were made on both muscle and intestinal fat samples for a total of 45 compounds, including most pesticides commonly used in Alberta. In addition PCB concentrations in sediments from the North Saskatchewan River were also measured. Based on these collections, it is concluded that:

1) The concentrations of all compounds in fish were generally low and presented no immediate threat to human consumers.
2) PCB residues in muscle tissue of fish from the North Saskatchewan River ranged from <0.01 to 1.66 mg/kg depending on species, compared to <0.5-104.0 mg/kg for intestinal fat samples. Residues in fish collected from the Edmonton area were not significantly higher than those found in other parts of the river. PCB concentrations in sediments were generally below 0.01 mg/kg from Edmonton to the Saskatchewan border.
3) Maximum PCB levels in the muscle tissue of fish from the Red Deer River ranged from <0.01 to 0.72 mg/kg, depending on species, compared to <0.01-15.9 mg/kg for intestinal fat samples.

4) Methoxychlor was frequently found in goldeye from the North Saskatchewan River but was not recorded in any Red Deer River sample. Its presence in goldeye, a highly migratory species, was probably a result of biting fly control programs in the Saskatchewan portion of the river.

5) Since PCBs, their metabolites and methoxychlor are known mutagens and potential carcinogens, the long term fate and partitioning of these compounds should be determined.

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1. INTRODUCTION

Prior to 1968, chlorinated pesticides such as DDT, dieldrin, aldrin and endrin were used extensively to control insects in many parts of the world. By 1972, many government agencies recognized the overall environmental hazards of several of these compounds and ordered restrictions on their use. The decision to curtail production of DDT in 1972 was based on the following factors: i) persistence of the parent compound and metabolites, ii) susceptability to large scale transport and volatilization, and iii) low water solubility and high lipophilicity. Today, most chlorinated pesticides have either no or only minor registered uses. Although toxaphene is still used in substantial amounts, its production will be significantly curtailed by 1986. Lindane (γ-HCH) is the only chlorinated insecticide that still finds widespread use. This reflects its short half life in tissues (<10 days) low bioconcentration factor (~150) and low toxicity towards mammals. In more recent years a wide range of other biocides have found increasing use in Alberta (Table 1). Most of these compounds also exhibit a short half-life, but may be moderately toxic to fish and mammals.

The use of polychlorinated biphenyls (PCBs) has decreased in recent years, reflecting their persistence, toxicity and susceptability to transport. Although actual production of PCBs in North American has now ceased, these compounds still escape into the environment following release from transformers, and other electrical devices. It has been estimated that 2.8 million capacitors containing PCBs are still in use in the USA. Of this, some 2000 rupture annually.

The Alberta Environmental Centre began analysis of chemical residues in fish tissues during 1980 in response to a request from Energy and Natural Resources (Fish and Wildlife Division). Samples were collected from a considerable number of lakes and rivers in Alberta (Table 2). The majority of these systems either maintain important fisheries or are sites of known/suspected contamination. During the initial stage of the project, analysis was restricted to pesticides, halogenated biphenyls, and mercury. It is anticipated that subsequent analysis will include high molecular weight organic compounds that are commonly produced or associated with the petrochemical industry and the oil and gas industry.

The purpose of this report is to present chemical residue data for fish collected from several sites along the North Saskatchewan River and the Red Deer River. Although analysis was restricted to pesticides and PCBs our earlier report (AEC, 1983a) described mercury levels in fish from the North Saskatchewan River. The results of that study indicated that consumption of goldeye, should be limited to <440 g per week, whereas consumption of pike >60 cm and walleye >35 cm should be less than 380 g per week. No restrictions were placed on pike or walleye less than these lengths.

Table 1. List of organic compounds determined in this study.

Chlorinated Compounds (detection unit 0.0005 ppm)	Organo-phosphate Pesticides (0.05 ppm)	Phenoxy Pesticides (0.05 ppm)
HCB (hexachlorobenzene)	Parathion	MCPA (metachlorophenoxy acetic acid)
γ, β, α HCH (hexachlorocyclohexane, or BHC)	Diazinon	2, 4-D
Heptachlor	Sumithion	2, 4, 5-T
Heptachlor epoxide	Malathion	Picloram
Chlordane (cis)	Ethion	MCPB (metachlorophenoxy butyric acid)
Oxychlordane	Dioxythion	Silvex
Aldrin	EPN (O-ethyl, O-4-nitro-phenyl phenyl phosphono-thiolate)	Dicamba
Dieldrin	Dursban	Pentachlorophenol
p,p'-DDT		
p,p-DDE, p,p-DDD		Other (0.05ppm)
Dicosol		Tedion
Aroclor 1254, 1260, 1242		Daconil
Polybrominated Biphenyls		
Mirex		
Pentachlorobenzene		
Toxaphene		
Methoxychlor		
Perthane		
Telodrine		
PCNB (Pentachloronitrobenzene)		
TCNB (Tetrachloronitrobenzene)		
Endosulfan		
Thiodan I		
Endrin		

Table 2. List of collection sites and target species of fish that have been analyzed by the Alberta Environmental Centre.

River/Lake	Location	Target Species
St. Mary's River	Lethbridge	pike, walleye, goldeye
Oldman River	Lethbridge	pike, walleye, goldeye
Oldman River	Crowsnest	salmonids, mountain whitefish
South Saskatchewan	Medicine Hat	pike, walleye, sauger, goldeye
Bow	Ghost Dam Bearspaw Dam	salmonids whitefish
Bow	Calgary	rainbow trout, whitefish
Bow	Bassano (below dam)	pike, walleye
Red Deer	Red Deer	goldeye, walleye, sauger
North Saskatchewan	Edmonton	pike, walleye, sauger, goldeye
North Saskatchewan	Myrnam	pike, walleye, sauger, goldeye
North Saskatchewan	Saskatchewan Border	pike, walleye, sauger, goldeye
Battle River	Forestburg	pike, walleye,
Wabamun Lake	Wabamun	pike
Beaver River	La Corey	pike, walleye
Athabasca	Hinton Athabasca	pike, walleye
Peace	Dunvegan	pike, walleye
Wapiti	Grande Prairie	pike, walleye
Lake Newell		lake whitefish
McGregor Lake		lake whitefish, pike

2. METHODS

2.1 North Saskatchewan River

The North Saskatchewan River originates in the Canadian Rockies about 100 km south of Jasper [Figure 1]. It has a total length of ~1300 km and flows in an eastward direction across Alberta, and into Saskatchewan. In north central Saskatchewan, approximately 45 km east of Prince Albert the North Saskatchewan River joins with the South Saskatchewan River to become the Saskatchewan River. The river is situated primarly on forested and agricultural land and consequently has received unintentional inputs of several biocides. In addition, the cities of Edmonton and Fort Saskatchewan discharge a variety of industrial wastes directly into the river.

Collections of fish were made at 3 sites located 30-400 km downstream of Edmonton [Figure 2]. The river in this area has a peak discharge of 550 m^3/sec falling to <100 m^3/sec during the winter. Water depth is generally <6 m and the river width is 150-500 m. Fish were collected on 12 occasions beginning August 1980 and finishing June 1982. Fish were caught by gill nets which were set for varying periods of time ranging from 1-16 hours. Some fish were also collected by seining and angling. Immediately after capture, the fish were put on ice and transported to the laboratory where they were frozen at -20°C within 4 hr of collection.

Sediment collections were made in four zones (A, B, C, and D) based upon run offs from the surrounding land use activities [Figure 2]. These included discharges from private, public, and agricultural land and discharges from storm sewers, municipal treatment plants and industrial waste. Zone A covers that section of the North Saskatchewan

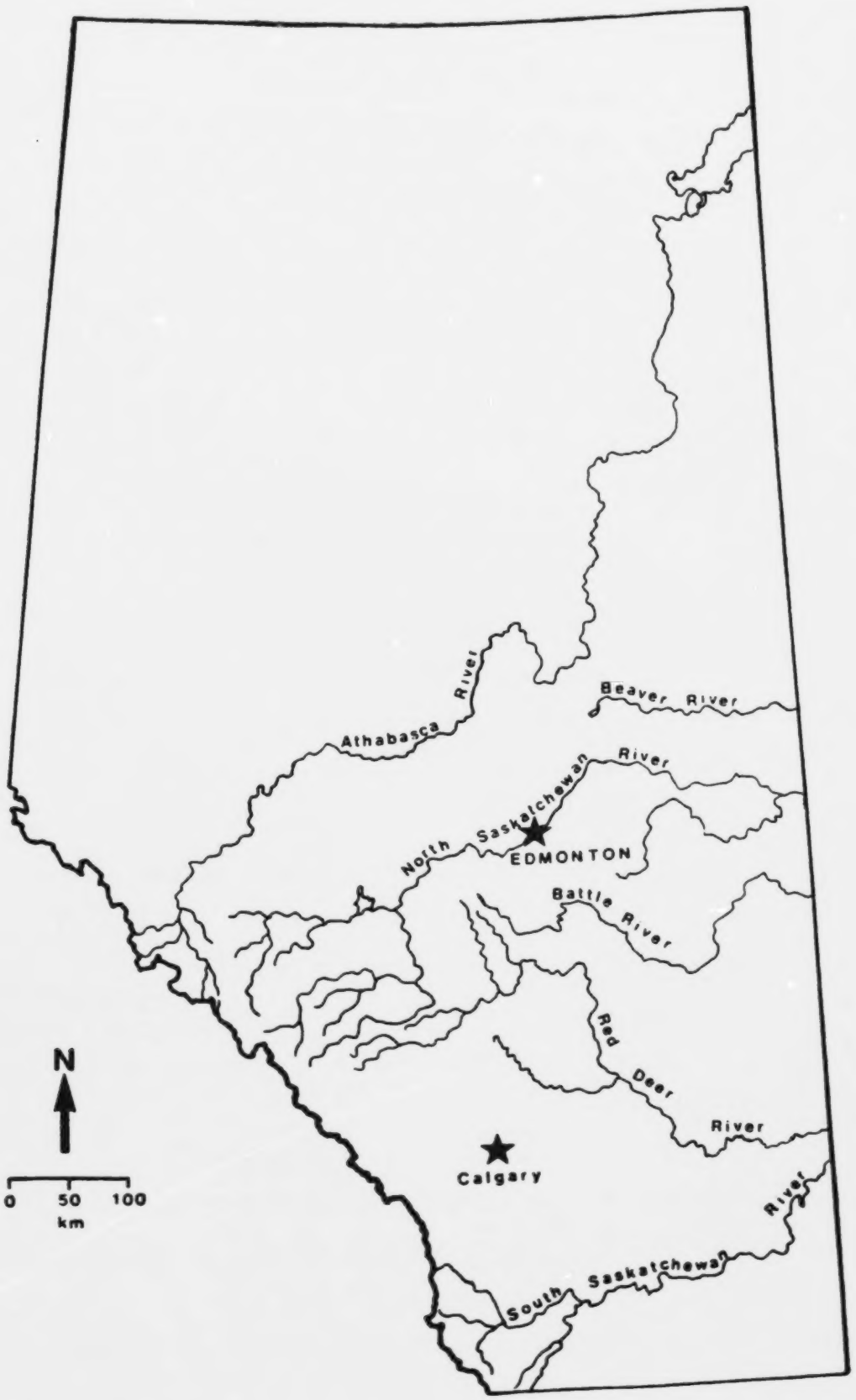

Figure 1. Map of Alberta showing location of study area.

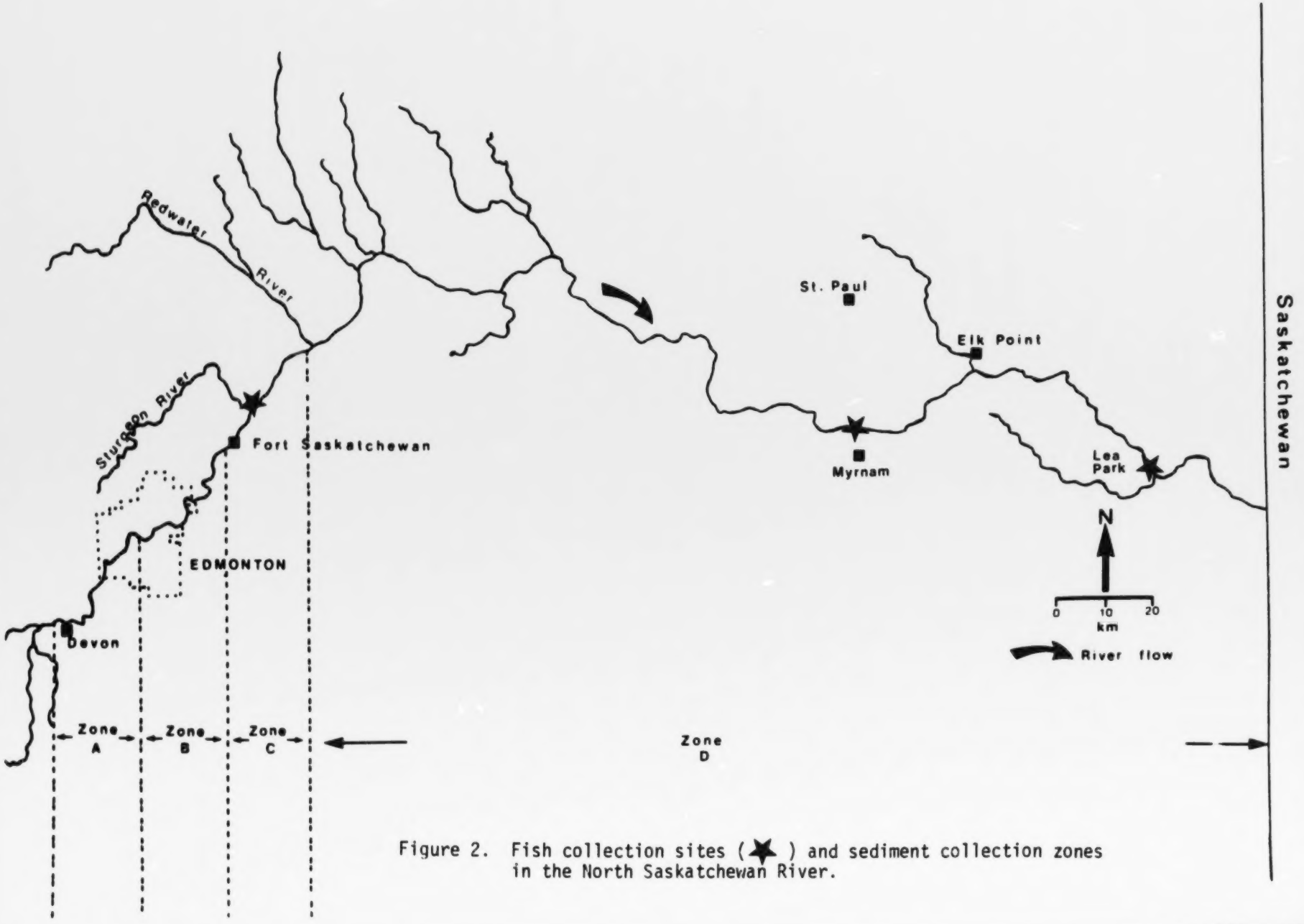

Figure 2. Fish collection sites (★) and sediment collection zones in the North Saskatchewan River.

River between the Devon Bridge (upstream of Edmonton) and the 109 th Street Bridge located in central Edmonton [Figure 2]. This zone receives run offs from public and private forest, recreational - agricultural land and inputs from west Edmonton storm sewers. Zone B covers that section of the river between the 109 th Street Bridge and the Fort Sasktachewan Highway #15 Bridge [Figure 2]. This area mainly receives inputs from storm sewers, municipal sewage outfalls, discharges from Refinery Row and other industrial activities. Zone C is the area between the Fort Saskatchewan Highway #15 Bridge and the Vinca (Redwater) Bridge. It mainly receives discharges from chemical industries, base metal refining, fertilizer manufacturing and discharge from municipal outfalls and the storm sewers of Fort Saskatchewan. Zone D covers that section of the North Saskatchewan River between the Vinca (Redwater) Bridge and the Alberta-Saskatchewan interprovincial border. This area primarily receives run-off from the surrounding agricultural land use activities.

During 1981, bottom sediment was collected using an air-lift suction sampler powered by the flow of compressed N_2 gas at 250-450 psi. Samples of the surface sediment (top 1 to 2 cm) were generally collected from the 0.5 to 1 m depth level, a depth at which the suction sampler operates most efficiently, although some sites necessitated sampling at the 0.25 m depth level. In order to regulate the sediment sampling depth a base plate (either 18 or 36 cm diameter) was attached to the base of the sampler to support the unit on the surface of sediment. This allowed the operator to work the suction sampler while ensuring that only the top 1 to 2 cm of the sediment bed was sampled.

The water-sediment mixtures lifted from the sediment bed were collected in 1 litre polypropylene bottles and transported to the laboratory as quickly as possible. They were then stored at 1-4°C. Later the clear aqueous supernatant layer was decanted and the sediment with its minimum water content was transferred to Whirlpak bags and stored at -20°C.

The sediment samples were later thawed slowly at room temperature, dried at ≤40°C and seived into two fractions; (i) 75-250 μm and (ii) <75 μm in grain size. These fractions were stored in polypropylene cups tightly sealed with polypropylene lids at room temperature pending analysis.

Collecting sediment using the air lift suction corer yielded only a small amount of sediment (usually ≤10 grams) from each site. This meant that many samples had to be combined within the various zones resulting in a reduced number of samples. It was necessary to alter the collection method for the 1982 sediment collections to a more conventional method to ensure a larger sample size, thus all the 1982 samples were collected using a 6" x 6"Ekman dredge. Sediment samples were taken at a depth range of 0.15 to 1.0 meters. These samples were placed in glass jars (1 or 2 L size) and sealed with river water rinsed foil between the glass and the plastic screw cap. The samples were then transported to the laboratory as soon as possible and stored at 1° - 4°C prior to analysis.

2.2 Red Deer River

The Red Deer River also originates in the Canadian Rockies, about 200 km south of Jasper [Figure 1]. It flows in a generally east and south direction until its confluence with the South Saskatchewan River some 725 km from its source. Although the river is situated mainly on forested and agricultural land, the City of Red Deer and smaller communities are known to discharge municipal and industrial wastes into the water course.

Collections of fish were made by Red Deer Fish and Wildlife Staff in one zone commencing 7 km downstream of Red Deer and covering about 13 km of river [Figure 3]. The river in this area is 100-150 m wide with a depth of generally < 3m. Peak discharge (~135 m^3/sec) occurs in June, falling to <10 m^3/sec during the winter. Fish were collected on 6 October 1981 using gill nets and an electroshocker. The nets were set overnight and the samples frozen at -20°C soon after capture. No sediments were collected from the Red Deer River.

3. CHEMICAL ANALYSIS

3.1 Fish

One sample of muscle and one of intestinal fat was collected from each fish for chemical analysis. Muscle (approximately 250 g wet weight), including both hypaxial and epaxial tissues, was obtained using a stainless steel filleting knife and then wrapped in aluminum foil. Approximately 5 g wet weight of intestinal fat was also extracted using stainless steel surgical instruments and then wrapped in foil.

The analytical method used to determine pesticide and PCB residues is given below:

Muscle:

1. 25 g of the muscle (without skin, scale and bone) was weighed into a 250 ml beaker, and 100 ml of distilled acetonitrile added.
2. Using a Polytron grinder, the muscle was ground in the solvent and then filtered in vacuum.
3. The filtrate was transferred to a 1-litre separatory funnel with 150 ml of petroleum ether. 600 ml of petroleum ether washed distilled water and about 5 g of NaCl were added to the separatory funnel and shaken well.
4. The separated petroleum ether layer was dried by passing it through a pad of anyhydrous sodium sulfate, and the filtrate evaporated to near-dryness. The moist residue was reconstituted in a minimum amount of petroleum ether and subjected to column chromatography.
5. A chromatography column with 50 g of Florisil containing 5% water was prepared and the concentrate was applied onto the

column. 220 ml of petroleum ether was poured onto the column and the "Petroleum Ether Fraction" was eluted. This fraction contains very non-polar compounds such as HCB, DDE, DDT, and PCB's. Then 275 ml of petroleum ether containing 25% methylene chloride was poured in and the Fraction II was eluted. This fraction contains slightly polar compounds such as α, β, γ-BHC, HE, Dieldrin, Endrin, and DDD.

6. Each fraction was evaporated to near-dryness and reconstituted with a small volume of hexanes (eg. 5-10 ml) and a small portion (eg. 5 μl) of this solution was injected to a gas chromatograph with an electron capture detector. A gas chromatogram thus obtained was compared to the standard pesticide gas chromatogram run along with the sample and by comparing the peak height of each pesticide, the quantities of pesticide in the sample were calculated and expressed in ppm.

Fat:

1. One gram of fat was weighed out and ground in a mortar with 25 g of Florisil containing 5% water and some anhydrous sodium sulfate.
2. A chromatography column was first prepared with 25 g of Florisil containing 5% water, then the above sample with Florisil was added on top of it.
3. The petroleum Fraction I was obtained by eluting with 250 ml

of petroleum ether and the Fraction II obtained by eluting with 275 ml of petroleum ether containing 25% methylene chloride.

4. Detection and quantification of the pesticide by gas chromatogram is the same as the muscle samples.

Precision and accuracy:

1. Detection limit (based on 25 g samples)
   - organochlorines, 0.001 ppm
   - PCB's, 0.02 ppm (without perchlorination)
     0.002 ppm (with perchlorination)
2. Recoveries from fortified fish muscle
   - organochlorines and PCB's, >80%
3. Accuracy:

Concentration of PCBs/organochlorine (mg/kg)	Limit of accuracy
1.0	± 10%
0.1	± 20%
0.01	± 50%
0.001	±100%

(according to Gunther, 1970)

4. Reproducibility (Precision):
   - ±10%

3.2 PCB in Sediments

10 g of the dry sediment (or 20 g of wet sediment) was weighed into a precleaned thimble. Precleaning was done by soaking the thimble overnight in methanol:methylene chloride mixture (1:1 v/v) and Soxhlet distilling (extractive distillation) with the same solvent mixture for three hours. All solvents were redistilled prior to use. The sediment in the thimble was soxhlet distilled overnight with a mixture of methanol:methylene chloride mixture (1:1 v/v). The mixture was then allowed to cool to the room temperature and then evaporated on a water bath (temp. <40°C) to approximately 20 ml of residual volume.

The residue was transferred to a one-litre separatory funnel with three rinses of 5 ml each of methanol:methylene chloride (1:1 v/v) mixture. 600 ml of organic free water (washed with petroleum ether) was added followed by 10 ml of saturated NaCl solution. This solution was shaken thrice separately (180, 90 and 60 ml) of methylene chloride and the non-aqueous (bottom) layer was passed through a Na_2SO_4 Column to remove traces of water. The Na_2SO_4 column was rinsed with 10 ml of methylene chloride and the combined fractions are evaporated on a water bath (<40°C) to near dryness.

A solution of 0.75 g of $AgNO_3$ in 0.7 ml of water was prepared and the warm solution was mixed with 4 ml of acetone slowly. To this, 10 g of alumina was added with rapid stirring and the acetone was distilled off in a rotary evaporator. This $AgNO_3$ coated alumina was packed 2 cm high at the bottom of a 3 cm diameter column. 50 g of florisil (5% deactivated) was placed over this and topped with a 2-3 cm Na_2SO_4 layer. The near dry sample was redissolved in 1-2 ml of methylene chloride and transferred to the column with 25 ml of redistilled petroleum ether.

The column is eluated with 250 ml of petroleum ether at a flow rate of 1 ml per minute. The eluate was evaporated on a water bath (<40°C) to near-dryness and then redissolved in 5 ml of hexane.

The sample was injected into a Hewlett Packard 5710A gas chromatograph equipped with a Ni^{63} electron capture detector (300°C). The column packing was OV101+QF1 (1:4) at 195°C.

The peak heights were summed up and compared against a mixture of standard Aroclors for identification and quantitation.

The analytical results on a Standard Reference Material (EC-1), freeze-dried sediment sample obtained from Quality Assurance and Methods Section, Canada Centre for Inland Waters, Burlington, Ontario, Canada showed the following precision and accuracy of the method.

Precision:	Reproducible to 98%
Accuracy:	Variation in certified value} ±2%
Detection Limit:	0.01 mg/kg

4. RESULTS

4.1 North Saskatchewan River

Of the 45 compounds listed in Table 1, 12 were found in fish from the North Saskatchewan River (Appendix 1). These include PCBs, methoxychlor, chlordane, oxychlordane, dieldrin, heptachlor epoxide, DDD, DDE, DDT, lindane, ∝-BHC and hexachlorobenzene. Within this group, PCBs generally occurred in greatest concentration, frequently exceeding 2 mg/kg in the intestinal fat samples regardless of species. However the highest level found in muscle tissue of walleye was 0.57 mg/kg compared to residues of 0.77 mg/kg for sauger, 0.74 mg/kg for goldeye, 0.02 mg/kg for pike, 0.54 mg/kg for longnose sucker, 1.66 mg/kg for northern redhorse, and 0.44 mg/kg for white sucker. All of these levels fall below the maximum consumption limit of 2 mg/kg.

The remaining compounds generally occurred at low levels and were often below detectable limits in the muscle tissue (Appendix 1). Since methoxychlor is not used on the North Saskatchewan River in Alberta, its presence in fish tissues is probably due to biting fly control programs in Saskatchewan. This view is supported by the fact that greatest residues were found in goldeye, a highly migratory species.

Based on the linear regressions in Figure 3, the concentration of PCB in the intestinal fat of an average goldeye measuring 35 cm in length and collected from the North Saskatchewan River near the mouth of the Sturgeon River was 6.6 mg/kg. By comparison residues of 8.3 and 4.5 mg/kg were recorded for fish of the same length from the Myrnam and Lea Park sampling areas respectively [Figure 3]. This indicates that either i) the input of PCBs from the Edmonton area did not contribute substantially to the burdens in fish, or ii) the goldeye were highly

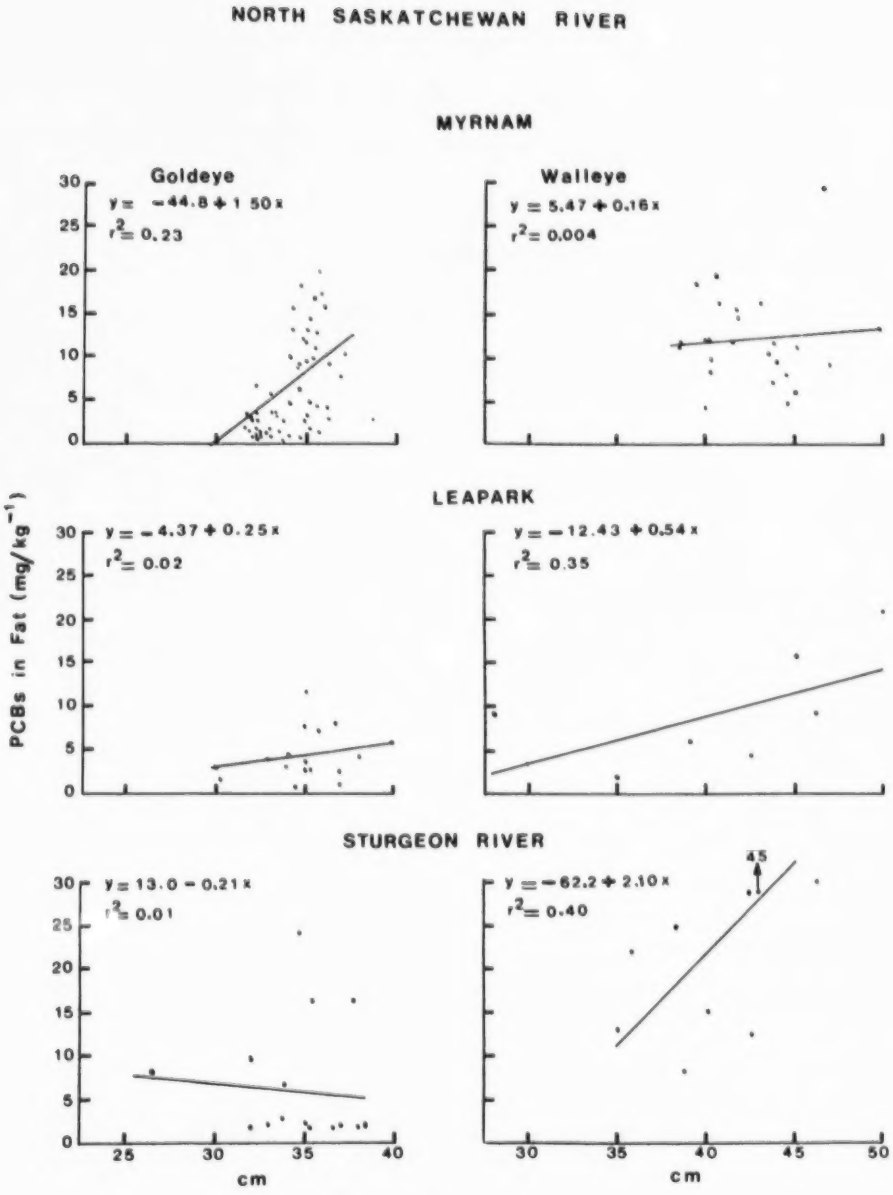

Figure 3. Concentration (mg/kg wet weight) of PCB in the intestinal fat of goldeye and walleye of different lengths collected from 3 locations on the North Saskatchewan River.

migratory and spent little time in the Edmonton area. Since PCB levels in sediments were generally similar and low throughout the river, it is likely that the latter alternate was more important in determing PCB uptake by fish. This is balanced by the fact that average residues in the intestinal fat of walleye from the Sturgeon River area were substantially greater than those collected from the downstream sites.

The concentration of PCBs in the sediments of the North Saskatchewan River were generally below the detectable limit of 10 µg/kg dry weight, regardless of site (Table 3). Residues in the Edmonton area were not significantly elevated over those from any other part of the river.

4.2 Red Deer River

PCB and pesticide residues in fish from the Red Deer River were invariably smaller than those recorded for fish from the North Saskatchewan River (Appendix 2). PCBs were once again the main contaminant, whereas methoxychlor was not detected. The peak PCB levels in the muscle of sauger was <0.01-0.06 mg/kg compared to 0.03-0.34 mg/kg for lake whitefish, <0.01-0.05 mg/kg for goldeye, <0.01-0.152 mg/kg for longnose sucker, 0.34-0.72 mg/kg for northern redhorse and <0.01 mg/kg for pike. Residues were higher in the intestinal fat samples, reaching 15.4, 5.5, 3.0, 5.3, 15.9 and 5.5 mg/kg respectively (Appendix 2; Figure 4). Other pesticides, such as DDT, DDE, lindane, dieldrin and chlordane were often below the level of detection in both tissues.

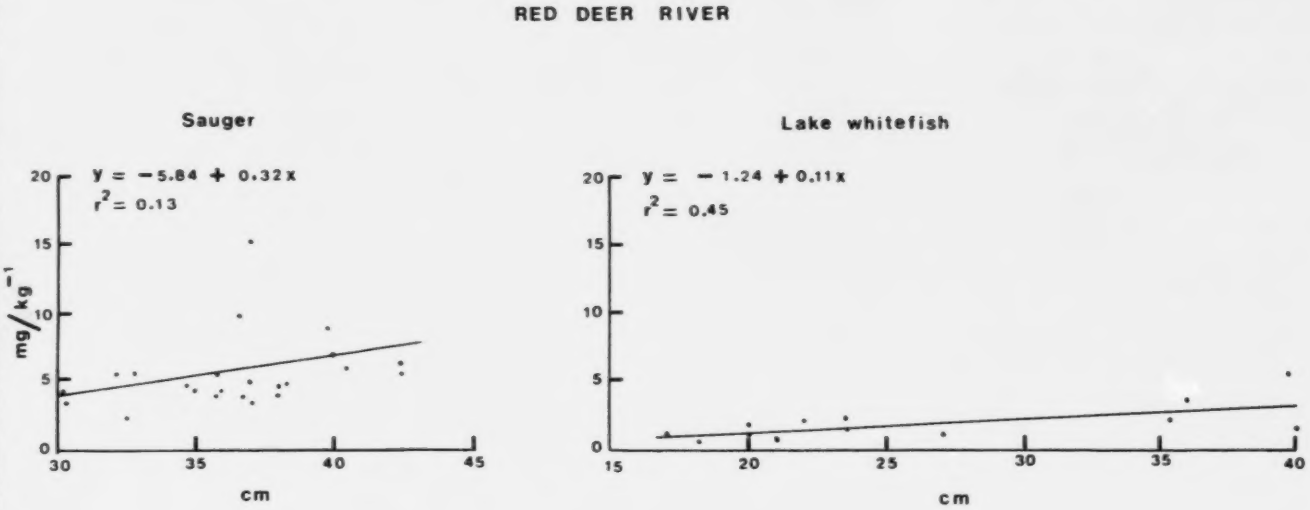

Figure 4. Concentration (mg/kg wet weight) of PCB in the intestine of sauger and lake whitefish of different lengths collected from the Red Deer River.

Table 3. Concentration of PCBs (µg/kg dry weight) in sediments of the North Saskatchewan River.

ZONE A

Sample No.	PCB Content	Sample No.	PCB Content
1	< 0.01	14	< 0.01
2	< 0.01	15	< 0.01
3	< 0.01	16	< 0.01
4	< 0.01	17	< 0.01
5	< 0.01	18	< 0.01
6	< 0.01	19	< 0.01
7	< 0.01		
8	< 0.01		
9	< 0.01		
10	< 0.01		
11	< 0.01		
12	< 0.01		
13	0.45		

ZONE B

Sample No.	PCB Content	Sample No.	PCB Content
1	< 0.01	8	< 0.01
2	< 0.01	9	< 0.01
3	< 0.01	10	< 0.01
4	< 0.01	11	< 0.01
5	< 0.01	12	< 0.01
6	< 0.01	13	< 0.01
7	< 0.01		

ZONE C

Sample No.	PCB Content	Sample No.	PCB Content
1	< 0.01	11	< 0.01
2	< 0.01	12	< 0.01
3	< 0.01	13	< 0.01
4	< 0.01	14	< 0.01
5	< 0.01	15	0.04
6	< 0.01	16	0.02
7	< 0.01	17	< 0.01
8	< 0.01	18	< 0.01
9	< 0.01	19	< 0.01
10	0.01	20	< 0.01

ZONE D

Sample No.	PCB Content	Sample No.	PCB Content
1	< 0.01	29	< 0.01
2	< 0.01	30	< 0.01
3	< 0.01	31	< 0.01
4	< 0.01	32	< 0.01
5	< 0.01	33	< 0.01
6	< 0.01	34	< 0.01
7	< 0.01	35	< 0.01
8	< 0.01	36	< 0.01
9	< 0.01	37	< 0.01
10	< 0.01	38	< 0.01
11	< 0.01	39	< 0.01
12	< 0.01	40	< 0.01
13	< 0.01	41	< 0.01
14	< 0.01	42	< 0.01
15	< 0.01	43	< 0.01
16	< 0.01	44	< 0.01
17	< 0.01	45	< 0.01
18	< 0.01	46	< 0.01
19	< 0.01	47	< 0.01
20	< 0.01	48	< 0.01
21	< 0.01	49	< 0.01
22	< 0.01	50	< 0.01
23	< 0.01	51	< 0.01
24	< 0.01	52	< 0.01
25	< 0.01	53	< 0.01
26	< 0.01	54	< 0.01
27	< 0.01	55	< 0.01
28	< 0.01	56	0.03

5. DISCUSSION

The concentrations of pesticides and PCBs in fish from both systems were generally low and met safe consumption limits. Similar findings have been reported for fish from other lakes and rivers in the province, including the Battle River, Beaver River, McGregor Lake, Lake Newell and Lake Wabamum (AEC, 1983b). Since the use of most chlorinated pesticides and PCBs has been curtailed in Alberta, it is likely that residues in fish will also decline. This of course assumes that there will be no major spills of PCBs or other industrial products into the river. Present evidence indicates that hydroxylation with the formation of an arene oxide intermediary is the primary metabolic breakdown mechanism for PCBs. Lower chlorinated biphenyls (LCBP) are particularly susceptable to degradation resulting in the appearance of polar, conjugated and free metabolites in the urine and feces. In addition, isomerization and dechlorination reactions have been implicated in the metabolism of high chlorinated biphenyls (HCBP). There may also be formation of potentially toxic dibenzofuran structures particularly in the liver. Consequently, it should be desirable to measure the concentration of dibenzofurans and related structures in fish from the North Saskatchewan River.

Methoxychlor is used to control biting insects in both the North and South Saskatchewan Rivers in Saskatchewan. This has probably led to significant uptake of methoxychlor by fish, and consequently migratory species such as goldeye and walleye appear in Alberta with elevated tissue residues. At present there does not appear to be any consumption standard for methoxychlor. This compound however is a known mutagen and

a potential carcinogenic. It breaks down to 2-hydroxy-1, 1-diphenyltrichloroethane, a potential mutagen, with some 2, 2-dehydroxy metabolite. Both of these compounds are water soluble and excreted by fish into the surrounding water column. The bioconcentration factor of methoxychlor is relatively high, ranging from 1500 to 120,000 depending on species. It is therefore recommended that routine monitoring of methoxychlor and its metabolites be conducted in goldeye and walleye.

The moderately high concentrations of PCBs in the fat of fish from both rivers reflects the lipophilic nature of these substances. Although residues occasionally exceeded the maximum consumption standard of 2 mg/kg, intestinal fat is not normally consumed by people. The data indicate that there is some on going release of PCBs into the food chain. This may be due to the mobilization of sediment-bound PCBs, the discharge of municipal wastes or escape from discarded transformers, capacitors and other PCB receptacles. Studies are currently underway by AEC staff to determine the source of PCBs in both rivers.

Some species of fish (goldeye, pike, walleye) from the North Saskatchewan River contain significant amounts of mercury in their tissues (AEC, 1983a). Assuming a Maximum Weekly Intake of 0.25 mg for an adult, consumption of goldeye should be limited to <440 g (16 oz) per week. Although consumption of pike >60 cm and walleye >35 cm should not exceed 380 (13 oz) no limits need to be placed on fish shorter than these lengths. Current studies by AEC staff are determining the source of mercury in the North Saskatchewan River.

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APPENDIX
Pesticide and PCB Tissue Analysis
All results in mg/kg (ppm)

SITE LEGEND
1: Myrnam Bridge
2: Lea Park
3: Sturgeon River

RIVER/LAKE: North Saskatchewan River

SPECIES: Goldeye

- is less than 0.0005 mg/kg (ppm)

S'ark: no data

SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB		∝BHC		METHOXY-CHLOR		DDE		DDT		DDD		HEPTACHLOR EPOXIDE		DIELDRIN		OXYCHLORDANE		CHLORDANE		PCB	
						muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat
1	28/08/80	34.5	0.52	M	7+	0.001	0.037	0.017	0.102	-	-	0.014	0.207	-	-	0.040	0.131	-	-	0.001	-	0.001	0.019	0.002	-	0.26	6.42
1	28/08/80	34.7	0.57	M	4+	0.001	0.044	0.025	0.129	-	-	0.031	0.591	0.01	-	0.010	0.205	-	-	0.003	0.012	0.002	0.003	0.001	-	0.42	9.25
1	28/08/80	35.9	0.59	M	6+	0.003	0.039	0.006	0.078	-	-	0.052	0.673	0.18	-	0.155	0.208	0.003	-	0.014	0.024	0.009	0.010	-	-	0.46	11.60
1	28/08/80	39.0	0.71	F	6+	0.002		0.009		-		0.014		-		0.008		-		0.001		0.001		-		0.21	
1	28/08/80	33.6	0.54	M	5+	0.001	0.022	0.013	0.082	-	-	0.008	0.080	-	-	-	0.051	-	0.014	-	-	-	0.010	-	-	0.08	1.73
1	28/08/80	31.9	0.40	M	5+	0.002	0.046	0.015	0.121	-	-	0.021	0.198	-	-	-	0.064	-	0.008	-	-	-	0.013	-	-	0.26	3.66
1	28/08/80	34.5	0.53	M	5+	-		0.004		-		0.001		-		-		-		-		-		-		-	
1	28/08/80	33.5	0.52	M	6+	0.004	0.050	0.009	0.087	-	-	0.011	0.163	-	-	0.005	0.070	-	0.004	-	-	0.001	-	-	-	0.12	3.36
1	28/08/80	32.3	0.46	M	4+	0.002	0.027	0.007	0.070	-	0.357	0.006	0.073	-	-	0.006	0.064	-	0.006	-	0.016	0.001	-	-	-	0.07	1.10
1	28/08/80	34.8	0.48	M	5+	0.003	0.052	0.003	0.105	-	-	0.018	0.191	-	-	0.010	0.073	-	0.008	-	-	-	0.011	-	-	0.19	3.59
1	28/08/80	29.1	0.28	F	7+	-		0.002		-		0.025		-		-		-		-		-		-		0.30	
1	28/08/80	33.8	0.60	F	5+	0.002	0.029	0.012	0.101	-	-	0.013	0.114	-	-	0.007	0.020	0.001	-	0.003	0.012	0.001	0.007	-	-	0.14	2.75
1	28/08/80	32.3	0.42	M	5+	0.001	0.027	0.010	0.069	-	-	0.008	0.070	-	-	-	0.057	-	0.008	-	0.025	-	0.011	-	-	0.07	1.28
1	28/08/80	37.8	0.65	F	6+	0.001		0.012		-		0.012		-		0.009		-		-		0.001		-		0.26	
1	28/08/80	34.5	0.48	M	5+	0.002	0.033	0.007	0.132	-	-	0.046	0.523	-	-	0.020	0.125	-	-	-	0.015	0.002	0.003	-	-	0.64	8.90
1	28/08/80	35.5	0.57	M	5+	0.002	0.030	0.009	0.088	-	-	0.052	0.206	-	-	0.022	0.237	-	-	-	-	0.002	0.021	-	-	0.72	4.53
1	28/08/80	33.1	0.51	M	5+	0.003	0.033	0.011	0.080	-	1.15	0.005	0.050	-	-	0.007	0.063	0.001	0.010	0.003	0.015	0.001	0.005	-	-	0.06	0.97
1	28/08/80	32.9	0.48	M	6+	0.003	0.032	0.012	0.059	-	1.52	0.006	0.055	-	-	0.008	0.054	0.001	0.004	0.002	0.013	0.001	0.003	-	-	0.09	1.25
1	28/08/80	32.1	0.39	M	4+	0.002	0.033	0.003	0.083	-	-	0.011	0.167	0.09	-	0.048	0.085	-	0.003	0.004	0.026	0.001	0.006	-	-	0.13	3.41
1	28/08/80	35.1	0.61	F	6+	0.003	0.032	0.010	0.092	-	-	0.007	0.078	-	-	0.097	0.037	0.013	0.008	0.027	-	0.013	0.003	-	-	0.08	1.75
1	28/08/80	35.2	0.55	M	5+		0.033		0.084		-		0.600		-		0.159		-		0.020		0.003		-		14.40
1	28/08/80	33.5	0.45	M	5+		0.034		0.085		-		0.154		-		0.056		-		0.018		0.002		0.056		3.64
1	28/08/80	34.4	0.50	M	4+		0.033		0.093		-		3.46		10.4		0.590		-		0.031		0.006		-		27.70
1	28/08/80	35.6	0.56	M	5+		0.045		0.110		-		0.452		-		0.171		-		0.025		0.005		-		12.80
1	28/08/80	34.9	0.59	F	5+		0.022		0.081		-		0.099		-		0.059		-		0.023		0.004		0.055		3.29
1	28/08/80	31.4	0.38	M	5+		0.034		0.091		0.129		0.111		-		0.063		-		0.019		0.003		0.046		2.34
1	28/08/80	34.7	0.52	F	5+		0.027		0.058		0.070		0.031		-		0.056		0.013		0.019		0.004		-		0.77
1	28/08/80	34.2	0.49	M	5+		0.042		0.096		-		0.182		-		0.091		-		0.022		0.005		0.038		4.67
1	28/08/80	34.3	0.53	M	5+		0.034		0.091		-		0.767		-		0.197		-		0.019		0.005		-		15.50
1	28/08/80	35.0	0.61	M	5+		0.031		0.081		-		0.560		-		0.222		-		0.020		0.004		-		9.23

*[ ] samples combined

APPENDIX
Pesticide and PCB Residue Analysis
All results in ug/kg (ppm)

SITE LEGEND
1: Myrnam Bridge
2: Lea Park
3: Sturgeon River

RIVER/LAKE: North Saskatchewan River

SPECIES: Goldeye (continued)

- is less than 0.0005 mg/kg (ppm)

Blank: no data

SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB muscle	HCB fat	∝BHC muscle	∝BHC fat	METHOXY-CHLOR muscle	METHOXY-CHLOR fat	DDE muscle	DDE fat	DDT muscle	DDT fat	DDD muscle	DDD fat	HEPTACHLOR EPOXIDE muscle	HEPTACHLOR EPOXIDE fat	DIELDRIN muscle	DIELDRIN fat	OXYCHLORDANE muscle	OXYCHLORDANE fat	CHLORDANE muscle	CHLORDANE fat	PCB muscle	PCB fat
1	28/08/80	34.9	0.54	M	5+		0.030		0.090		-		0.788		-		0.215		-		0.029		0.006		-		12.40
1	28/08/80	34.0	0.48	M	6+		0.034		0.099		-		0.264		-		0.017		-		0.018		0.003		-		4.83
1	28/08/80	33.8	0.45	M	5+		0.035		0.098		-		0.220		-		0.090		-		0.016		0.006		0.070		4.66
1	28/08/80	32.2	0.45	M	5+		0.041		0.072		0.755		0.053		-		0.055		-		0.021		-		-		0.82
1	28/08/80	39.0	0.68	F	6+		0.009		0.067		-		0.162		-		0.093		-		0.031		0.008		-		2.96
1	28/08/80	35.8	0.52	M	4+		0.028		0.085		-		1.78		-		0.310		-		0.032		0.011		-		15.70
1	28/08/80	33.0	0.48	F	4+		0.030		0.081		0.617		0.117		-		0.040		-		0.026		-		-		2.08
1	28/08/80	34.4	0.57	F	4+		0.031		0.090		-		1.02		-		0.193		-		0.016		0.003		-		12.20
1	28/08/80	37.0	0.62	M	5+		0.032		0.083		-		0.859		-		0.196		-		0.023		0.005		-		10.40
1	28/08/80	34.1	0.57	F	7+		0.034		0.074		0.265		0.053		-		0.064		-		0.021		0.004		-		1.04
1	28/08/80	33.3	0.44	M	5+		0.037		0.096		-		0.236		-		0.127		-		0.029		0.002		0.077		5.95
1	28/08/80	35.4	0.58	M	5+		0.027		0.081		-		0.968		-		0.188		-		0.020		0.003		-		16.90
1	28/08/80	32.4	0.45	M	6+		0.035		0.091		2.10		0.103		-		0.093		-		0.021		0.005		0.035		2.65
1	28/08/80	34.2	0.53	M	7+		0.039		0.107		-		0.486		-		0.072		-		0.012		-		-		13.60
1	28/08/80	31.5	0.40	M	6+		0.036		0.088		1.10		0.099		-		0.069		-		0.019		0.002		0.042		2.63
1	28/08/80	31.8	0.44	M	5+		0.037		0.075		0.213		0.071		-		0.058		-		0.023		0.004		-		1.36
1	28/08/80	36.2	0.50	M	7+		0.038		0.088		-		0.215		-		0.102		-		0.029		0.005		0.048		3.24
1	28/08/80	33.1	0.44	M	5+		0.075		0.097		0.338		0.158		-		0.051		0.004		0.018		0.002		-		3.55
1	28/08/80	34.7	0.50	M	7+		0.041		0.106		-		0.735		-		0.203		-		0.026		0.004		-		18.20
1	28/08/80	35.4	0.58	M	5+		0.044		0.103		-		0.684		-		0.248		-		0.024		0.004		-		12.00
1	28/08/80	34.0	0.52	M	7+		0.033		0.086		-		0.495		-		0.143		-		0.023		0.003		-		10.10
1	28/08/80	32.1	0.42	M	6+		0.031		0.091		-		0.152		-		0.048		-		0.012		0.003		0.038		3.64
1	28/08/80	32.2	0.45	F	5+		0.040		0.084		0.238		0.073		-		0.050		-		0.014		0.002		-		1.88
1	28/08/80	36.1	0.64	M	6+		0.036		0.092		-		0.172		-		0.097		-		0.018		0.002		-		4.41
1	28/08/80	32.4	0.40	M	4+		0.032		0.071		-		0.282		-		0.137		-		0.018		0.002		-		7.23
1	28/08/80	31.4	0.44	M	6+		0.037		0.090		0.320		0.075		-		0.052		-		0.028		0.002		-		2.09
1	28/08/80	32.4	0.45	M	6+		0.035		0.077		0.437		0.056		-		0.038		-		0.023		-		-		1.32
1	28/08/80	35.7	0.53	M	5+		0.038		0.097		-		1.35		1.70		0.263		-		0.024		0.004		-		17.00
1	28/08/80	31.6	0.42	M	6+		0.028		0.086		-		0.129		-		0.052		-		-		0.002		-		3.22
1	28/08/80	33.8	0.52	M	5+		0.022		0.084		-		0.033		-		0.031		-		0.016		0.002		-		0.51

*[ ] samples combined

APPENDIX
Pesticide and PCB Residue Analysis
All results in wet wt (ppm)

SITE LEGEND
1: Myrnam Bridge
2: Lea Park
3: Sturgeon River

RIVER/LAKE: North Saskatchewan River

SPECIES: Goldeye (continued)

- is less than 0.0005 mg/kg (ppm)

Blank: no data

SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB		α-BHC		METHOXY-CHLOR		DDE		EDT		DDD		HEPTACHLOR EPOXIDE		DIELDRIN		OXYCHLORDANE		CHLORDANE		PCB	
						muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat
1	28/08/80	35.5	0.57	M	5+		0.022		0.082		-		1.15		-		0.170		-		0.021		0.002		-		19.80
1	28/08/80	35.2	0.50	M	5+		0.025		0.071		-		0.953		1.18		0.320		-		-		0.002		-		8.69
1	28/08/80	35.3	0.58	M	6+		0.024		0.086		-		0.225		-		0.098		-		-		0.002		-		4.55
1	28/08/80	32.0	0.40	M	6+		0.043		0.089		0.118		0.122		-		0.052		0.004		0.024		0.002		0.037		2.69
1	28/08/80	35.2	0.58	M	5+		0.062		0.124		-		0.988		-		0.261		0.008		-		0.013		-		12.90
1	28/08/80	33.6	0.45	M	5+		0.028		0.075		0.037		0.236		-		0.100		-		0.023		0.003		-		5.11
1	28/08/80	32.1	0.42	M	6+		0.023		0.067		0.300		0.068		-		0.093		0.011		0.026		0.004		0.019		1.60
1	02/09/81	35.7	0.62	F	7+	0.005		0.008		-	0.270	0.007		-		-		-		-		-		-		0.15	
1	02/09/81	36.2	0.58	F	5+	0.001	0.036	0.005	-	-	-	0.081	0.996	0.09	1.90	0.023	-	-	-	-	-	-	-	-	-	0.50	8.94
1	02/09/81	34.2	0.45	M	8+	0.001	0.038	0.004	-	-	-	0.022	0.303	-	-	-	0.168	-	-	-	-	-	-	-	-	0.51	6.22
1	02/09/81	36.6	0.57	M		-	-	0.001	-	-	-	0.121	2.410	0.27	4.48	0.043	-	-	-	-	-	-	-	-	-	0.42	7.66
1	03/09/81	34.6	0.54	M		[-]	-	[-]	-	[-]	-	[0.002]	0.078	[-]	-	[0.002]	-	[-]	-	[-]	-	[-]	-	[-]	-	[0.05]	1.96
1	03/09/81	33.4	0.43	M			-		-		-	[-]	0.019		-		-		-		-		-		-		0.86
2	25/08/81	36.8	0.77	F			[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]
2	25/08/81	37.2	0.57	F		-	[0.024]	-	[-]	-	[-]	0.001	[0.019]	-	[-]	-	[-]	-	[-]	-	[-]	-	[-]	-	[-]	0.031	[1.12]
2	25/08/81	37.0	0.66	F		-	[0.016]	0.002	[-]	-	[-]	0.005	[0.037]	-	[-]	0.002	[-]	-	[-]	-	[-]	-	[-]	-	[-]	0.08	[2.48]
2	25/08/81	37.1	0.61	F		0.001	[ ]	0.001	[ ]	-	[ ]	0.004	[ ]	-	[ ]	0.002	[ ]	-	[ ]	-	[ ]	-	[ ]	-	[ ]	0.10	[ ]
2	25/08/81	37.9	0.62	M		-	[0.057]	0.001	[-]	-	[-]	-	[0.064]	-	[-]	0.002	[-]	-	[-]	0.001	[-]	-	[-]	-	[-]	-	[4.38]
2	25/08/81	37.9	0.79	F			[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]
2	25/08/81	38.3	0.70	F	7+	-	[-]	0.001	[-]	-	[-]	0.003	[-]	-	[-]	0.001	[-]	-	[-]	-	[-]	-	[-]	-	[-]	0.09	[-]
2	25/08/81	39.2	0.79	F		0.001	[ ]	0.002	[ ]	-	[ ]	0.005	[ ]	-	[ ]	0.002	[ ]	-	[ ]	0.001	[ ]	-	[ ]	0.001	[ ]	0.14	[ ]
2	25/08/81	35.3	0.45	M		[-]	[ ]	[0.001]	[ ]	[-]	[ ]	[0.003]	[ ]	[-]	[ ]	[-]	[ ]	[-]	[ ]	[-]	[ ]	[-]	[ ]	[-]	[ ]	[0.11]	[ ]
2	25/08/81	34.1	0.49	M			[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]
2	25/08/81	34.8	0.58	F		0.002	[0.034]	0.005	[0.019]	-	[-]	0.012	[0.074]	-	[-]	0.005	[-]	0.001	[-]	-	[-]	0.001	[-]	0.002	[-]	0.30	[3.04]
2	25/08/81	32.5	0.50	M			[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]
2	25/08/81	35.6	0.52	M	5+	[ ]	-	[ ]	0.009	[ ]	-	[ ]	0.169	[ ]	-	[ ]	0.036	[ ]	-	[ ]	-	[ ]	-	[ ]	-	[ ]	2.84
2	25/08/81	35.4	0.59	F	7+	[-]	[0.029]	[-]	[0.032]	[-]	[-]	[.003]	[0.090]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[0.07]	[2.46]
2	25/08/81	35.4	0.56	M			[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]
2	25/08/81	36.2	0.53	F		0.002	[0.045]	0.002	[-]	-	[-]	0.039	[0.868]	-	[-]	0.008	[-]	-	[-]	-	[-]	-	[-]	-	[-]	0.74	[7.96]
2	25/08/81	36.7	0.60	M		-	[ ]	0.001	[ ]	-	[ ]	0.047	[ ]	0.05	[ ]	0.009	[ ]	-	[ ]	-	[ ]	-	[ ]	-	[ ]	0.17	[ ]

*[ ] samples combined

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Pesticide and PCB Residue Analysis
All results in mg/kg (ppm)

SITE LEGEND
1: Myrnam Bridge
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SPECIES: Goldeye (continued)

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SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB		α-BHC		METHOXY-CHLOR		DDE		DDT		DDD		HEPTACHLOR EPOXIDE		DIELDRIN		OXYCHLORDANE		CHLORDANE		PCB	
						muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat
2	25/08/81	35.9	0.56	M		0.003	[ ]	0.003	[ ]	0.054	[ ]	0.014	[ ]	-	[ ]	0.006	[ ]	-	[ ]	0.002	[ ]	0.001	[ ]	0.003	[ ]	0.32	[ ]
2	25/08/81	35.7	0.60	F		[ ]	0.048	[ ]	-	[ ]	-	[ ]	0.653	[ ]	-	[ ]	-	[ ]	-	[ ]	-	[ ]	[ ]	[ ]	-	[ ]	[ ]	[ ]	7.23
2	25/08/81	35.8	0.59	M																							
2	25/08/81	32.9	0.44	M	9+	0.001	-	-	0.031	-	-	0.001	0.190	-	-	-	0.022	-	-	-	0.006	-	-	-	-	0.03	3.86
2	25/08/81	30.6	0.38	M		[ ]	-	[ ]	0.027	[ ]	-	[ ]	0.440	[ ]	-	[ ]	0.016	[ ]	-	[ ]	0.009	[ ]	-	[ ]	-	[ ]	[ ]	[ ]	1.61
2	25/08/81	34.6	0.52	M	5+	0.002	-	0.002	0.008	-	-	0.007	0.051	-	-	0.004	0.025	-	-	0.001	0.013	-	-	0.002	-	0.14	0.87
2	25/08/81	35.4	0.57	M		0.001	-	0.003	0.032	-	-	0.015	0.113	-	-	0.006	0.030	-	-	-	0.009	-	-	-	-	0.35	8.03
2	25/08/81	35.2	0.58	F		0.001		0.004		-		0.007		-		0.007		-		0.002		-		-		0.12	
2	18-19/09/81	34.0	0.51	M		0.001	0.053	0.003	-	-	0.917	0.003	-	0.001	-	0.007	-	-	0.012	-	0.011	-	-	-	-	0.07	4.60
2	18-19/09/81	35.0	0.62	F		0.002	0.033	0.006	-	-	-	0.003	-	-	-	-	-	-	-	-	-	-	-	-	-	0.09	3.36
2	18-19/09/81	35.1	0.50	M		0.001	-	0.001	0.019	-	-	0.016	0.341	0.002	-	0.006	0.093	-	-	-	-	-	-	-	0.109	0.52	11.90
3	04/05/82	35.4	0.55	M		-	0.052	0.002	0.117	-	-	0.039	0.705	-	-	-	0.153	-	-	-	0.015	-	-	-	-	0.53	16.30
3	04/05/82	37.8	0.51	F		-		0.006		-		0.004		-		-		-		-		-		-		0.01	
3	04/05/82	34.9	0.64	F		0.003	0.043	0.017	0.141	0.01	1.36	0.091	0.073	-	-	-	0.040	-	-	-	0.019	-	-	-	-	0.09	2.18
3	04/05/82	33.1	0.53	F		0.003	0.027	0.003	0.126	-	-	0.046	0.086	-	-	-	0.037	-	-	-	0.009	-	-	-	-	0.06	2.14
3	04/05/82	34.7	0.52	M		-	0.027	0.010	0.121	-	-	0.136	1.20	-	-	-	0.214	-	-	-	0.011	-	-	-	-	0.42	24.00
3	04/05/82	33.6	0.48	M		-	0.033	-	0.170	-	-	0.022	0.130	-	-	-	0.061	-	-	-	0.011	-	-	-	-	0.08	2.61
3	04/05/82	26.5	0.26	M		-	0.029	-	0.139	-	-	0.028	1.23	-	-	-	0.113	-	-	-	0.023	-	-	-	-	0.15	7.89
3	05/05/82	38.4	0.60	F		*	0.009	[ ]	-	[ ]	-	[ ]	0.044	[ ]	-	[ ]	-	[ ]	-	[ ]	-	[ ]	-	[ ]	-	[ ]	1.94
3	05/05/82	34.8	0.57	M		0.001	[ ]	0.001	[ ]	-	[ ]	0.007	[ ]	-	[ ]	0.003	[ ]	-	[ ]	-	[ ]	-	[ ]	-	[ ]	0.09	[ ]
3	04/05/82	34.3	0.59	F		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]	
3	19/05/82	33.9	0.60	F		[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
3	19/05/82	33.6	0.56	F																							
3	27/05/82	32.9	0.49	M		-	-	-	-	0.02	-	0.001	0.015	-	-	0.001	-	-	-	-	-	-	-	-	-	0.04	1.61
3	27/05/82	32.2	0.50	M																							
3	02/06/82	33.6	0.56	F																							
3	02/06/82	33.0	0.54	F																							

*[ ] sample combined

APPENDIX
Pesticide and PCB Residue Analysis
All results in mg/kg (ppm)

SITE LEGEND
1: Myrnam Bridge
2: Lea Park
3: Sturgeon River

RIVER/LAKE: North Saskatchewan River

SPECIES: Goldeye (continued)

- is less than 0.0005 mg/kg (ppm)

Blank: no data

SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB muscle	HCB fat	α-BHC muscle	α-BHC fat	METHOXY-CHLOR muscle	METHOXY-CHLOR fat	DDE muscle	DDE fat	DDT muscle	DDT fat	DDD muscle	DDD fat	HEPTACHLOR EPOXIDE muscle	HEPTACHLOR EPOXIDE fat	DIELDRIN muscle	DIELDRIN fat	OXYCHLORDANE muscle	OXYCHLORDANE fat	CHLORDANE muscle	CHLORDANE fat	PCB muscle	PCB fat
3	19/05/82	34.2	0.48	M																							
3	19/05/82	34.5	0.55	F																							
3	19/05/82	35.2	0.66	F		-	-	0.001	-	0.01	-	0.004	0.216	-	-	0.003	-	-	-	-	-	-	-	-	-	0.17	1.90
3	27/05/82	35.6	0.55	M																							
3	02/06/82	35.5	0.64	F																							
3	02/06/82	34.7	0.62	F																							
3	27/05/82	36.9	0.72	F																							
3	27/05/82	36.7	0.70	F																							
3	02/06/82	36.9	0.76	F																							
3	02/06/82	36.9	0.62	F		-	-	-	-	0.01	-	-	0.018	-	-	0.001		-	-	-	-	-	-	-	-	0.02	1.74
3	02/06/82	36.6	0.70	F																							
3	02/06/82	36.3	0.64	F																							
3	02/06/82	36.4	0.78	F																							
3	19/05/82	38.3	0.66	F																							
3	27/05/82	38.6	0.71	F		-	-	-	-	-	-	0.001	0.020	-	-	0.001	-	-	-	-	-	-	-	-	-	0.05	1.91
3	02/06/82	38.1	0.68	F																							
3	02/06/82	33.1	0.46	M			* -		-		-		0.148		-		-		-		-		-		-		3.67
3	02/06/82	31.0	0.40	M																							
3	02/06/82	34.7	0.57	M			-		-		-		0.145		-		-		-		-		-		-		7.00
3	02/06/82	34.2	0.50	M																							
3	02/06/82	38.5	0.82	F			-		-		-		0.022		-		-		-		-		-		-		1.88
3	02/06/82	36.9	0.74	F																							

*[ ] samples combined

SITE LEGEND
1: Myrnam Bridge
2: Lea Park
3: Sturgeon River

APPENDIX
Pesticide and PCB Residue Analysis
All results in mg/kg (ppm)

RIVER/LAKE: North Saskatchewan River

SPECIES: Longnose Sucker

- is less than 0.0005 mg/kg (ppm)

Blank: no data

SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB		∝BHC		METHOXY-CHLOR		DDE		DDT		DDD		HEPTACHLOR EPOXIDE		DIELDRIN		OXYCHLORDANE		CHLORDANE		PCB	
						muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat
1	28/08/80	41.9	1.1	F	4+	0.001		0.005		-		0.003		-		0.004		0.001		0.002		0.001		-		0.07	
1	28/08/80	48.0	1.4	F	5+	0.001	0.022	0.008	0.059	-	-	0.037	0.622	0.01	-	0.023	0.338	-	-	-	0.029	0.002	0.014	-	0.242	0.54	10.5
1	28/08/80	47.8	1.5	F	5+	0.001	0.025	0.009	0.059	-	-	0.025	0.437	-	-	0.017	0.197	-	-	-	0.023	0.001	0.008	-	0.215	0.49	11.3
1	02/09/81	42.0	1.1	F		0.001	0.022	0.001	0.077	-	-	0.002	0.112	-	-	0.002	-	-	-	-	0.010	-	-	0.004	0.092	0.08	2.82
1	02/09/81	41.6	1.03	M		-	0.024	0.007	0.063	-	-	0.023	0.182	-	-	-	-	-	-	-	0.016	-	-	-	0.119	0.35	4.00
1	02/09/81	42.5	1.16	M		-	0.023	0.002	0.060	-	-	0.014	0.314	-	-	-	0.046	-	-	-	0.013	-	-	-	0.139	0.310	7.49
1	02/09/81	37.6	0.38	M		-	0.010	0.002	0.029	-	-	-	0.070	-	-	-	-	-	-	-	-	-	-	-	0.049	0.05	1.70
1	02/09/81	27.7	0.31	I		-	0.003	-	0.047	-	-	-	0.059	-	-	-	-	-	-	-	0.002	-	-	-	0.041	-	1.66
1	03/09/81	39.5	0.96	M		-	0.014	-	0.045	-	-	0.006	0.068	-	-	0.004	0.014	-	-	0.002	0.007	-	-	-	0.065	0.12	1.95
1	03/09/81	40.9	0.98	M		-	0.013	-	0.053	-	-	0.014	0.280	-	-	0.006	0.050	-	0.005	0.001	0.010	-	-	-	0.164	0.19	6.52
1	03/09/81	29.3	0.36	I		-		-		-		0.002		-		0.001		-		-		-		-		0.03	
1	03/09/81	42.7	1.17	M		-	0.015	0.001	0.052	-	-	0.004	0.082	-	-	0.003	0.022	-	0.006	0.001	0.006	-	-	-	0.062	0.07	2.30
1	03/09/81	40.5	0.98	M		-	0.013	0.001	0.058	-	-	0.002	0.079	-	-	0.001	0.021	-	-	-	0.009	-	-	-	0.061	0.04	2.11
1	03/09/81	40.3	0.82	M		-	0.019	-	0.062	-	-	0.006	0.093	-	-	-	0.013	-	-	-	0.010	-	-	-	0.067	0.09	2.00
1	03/09/81	42.9	1.17	F		-	0.025	-	0.076	-	-	0.019	0.298	-	-	-	0.102	-	-	-	0 020	-	-	-	0.205	0.43	9.12
2	24/06/81	44.2	1.3	F	4+	0.001	-	0.003	0.036	-	-	-	-	0.001	-	0.004	0.059	-	-	-	0.014	-	-	-	-	0.07	2.91
2	25/03/81	42.0	0.94	F	4+	-	0.021	-	-	-	-	-	0.049	-	-	0.002	-	-	-	-	-	-	-	-	-	-	2.97
2	25/08/81	33.1	0.74	F	4+	-	0.014	-	-	-	-	-	0.027	-	-	-	-	-	-	-	-	-	-	-	-	-	1.62
2	25/08/81	41.1	0.95	F	7+	*																					
2	25/08/81	40.0	0.84	M	5+	-		-		-		0.001		-		-		-		-		-		-		0.05	
2	25/08/81	40.6	0.38	F	6+																						
2	25/08/81	39.5	0.80	F	6+																						
2	25/08/81	39.6	0.87	M	4+	-		-		-		0.001		-		-		-		-		-		0.002		0.04	
2	25/08/81	39.4	0.95	F	4+																						
2	25/08/81	41.8	0.99	F	6+																						
2	25/08/81	45.6	1.33	F	8+	-		-		-		0.001		-		-		-		-		-		-		0.04	
2	25/08/81	42.1	1.30	F	6+																						
2	19/09/81	43.6	1.18	F																							
2	19/09/81	43.8	1.25	F		0.001	0.019	0.001	-	-	-	0.006	0.078	-	-	0.002	0.036		-	-	-	-	-	0.021	0.173	0.40	3.85
2	19/09/81	41.2	1.05	M																							

*[ ] samples combined

APPENDIX
Pesticide and PCB Residue Analysis
All results in mg/kg (ppm)

SITE LEGEND
1: Myrnam Bridge
2: Lea Park
3: Sturgeon River

RIVER/LAKE: North Saskatchewan River

SPECIES: Longnose sucker (continued)

- is less than 0.0005 mg/kg (ppm)

Blank: no data

SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB		α-BHC		METHOXY-CHLOR		DDE		DDT		DDD		HEPTACHLOR EPOXIDE		DIELDRIN		OXYCHLORDANE		CHLORDANE		PCB	
						muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat
2	19/09/81	40.2	0.83	F		[0.001	]	[-	]	[-	]	[-	]	[-	]	[-	]	[-	]	[-	]	[-	]	[-	]	[0.06	]
2	19/09/81	38.3	0.83	M		[	] -	[	] -	[	] -	[	] 0.033	[	] -	[	] -	[	] -	[	] -	[	] -	[	] 0.075	[	] 2.61
2	19/09/81	39.4	0.89	M		[	]	[	]	[	]	[	]	[	]	[	]	[	]	[	]	[	]	[	]	[	]
2	19/09/81	35.1	0.58	M		[-	]	[-	]	[-	]	[-	]	[-	]	[-	]	[-	]	[-	]	[-	]	[-	]	[-	]
2	19/09/81	39.0	0.85	-																							
3	04/05/82	40.9	1.04	M																							
3	04/05/82	41.1	1.10	F																							
3	04/05/82	41.8	1.32	M		-	-	0.002	0.013	-	-	0.001	0.056	-	-	0.001	-	-	-	-	-	-	-	0.004	-	0.03	2.67
3	04/05/82	40.9	1.10	M																							
3	04/05/82	43.6	1.27	F																							
3	04/05/82	41.6	1.18	M		0.001	-	-	0.013	-	-	0.003	0.050	-	-	-	-	-	-	-	-	-	-	0.008	-	0.10	2.13
3	04/05/82	43.8	1.44	F																							
3	04/05/82	45.3	1.24	F		0.001	-	-	0.014	-	-	0.003	0.085	-	-	-	-	-	-	-	-	-	-	0.009	-	0.12	3.73
3	04/05/82	44.3	1.40	F																							
3	04/05/82	40.2	0.96	M																							
3	04/05/82	40.3	0.95	M		-	-	0.001	-	-	-	0.001	0.060	-	-	0.001	-	-	-	-	-	-	-	0.003	-	0.03	2.73
3	04/05/82	40.2	1.04	M																							
3	05/05/82	39.9	1.60	M		0.001	0.027	0.002	-	-	-	0.003	0.103	-	-	-	-	-	-	-	-	-	-	0.005	0.217	0.11	4.79
3	10/05/082	37.6	0.79	M		[	-]	[	0.005]	[	-]	[	0.165]	[	-]	[	0.119]	[	-]	[	0.017]	[	-]	[	0.333]	[	11.80]
3	10/05/82	40.7	0.96	M																							
3	10/05/82	45.0	1.37	F		[	-]	[	0.007]	[	-]	[	0.040]	[	-]	[	0.057]	[	-]	[	0.013]	[	-]	[	0.089]	[	2.53]
3	10/05/82	45.9	1.60	F																							
3	10/05/82	43.7	1.24	F		[	-]	[	0.008]	[	-]	[	0.045]	[	-]	[	0.043]	[	-]	[	0.009]	[	-]	[	0.083]	[	1.01]
3	10/05/82	44.5	1.44	F																							

*[ ] samples combined

APPENDIX
Pesticide and PCB Residue Analysis
All results in mg/kg (ppm)

SITE LEGEND
1: Myrnam Bridge
2: Lea Park
3: Sturgeon River

RIVER/LAKE: North Saskatchewan River

SPECIES: White Sucker

- is less than 0.0005 mg/kg (ppm)

Blank: no data

SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB		∝BHC		METHOXY-CHLOR		DDE		DDT		DDD		HEPTACHLOR EPOXIDE		DIELDRIN		OXYCHLORDANE		CHLORDANE		PCB	
						muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat
1	28/08/80	44.0	1.55	F	4+	-		0.002		-		0.002		-		-		-		-		-		0.001		0.05	
1	28/08/80	41.2	1.10	F	5+	-	0.013	0.003	0.055	-	-	0.002	0.059	-	-	0.001	0.052	-	-	-	0.010	-	-	0.001	-	0.03	1.19
1	28/08/80	43.8	1.20	F	4+	-		0.001		-		0.002		-		-		-		-		-		-		0.03	
1	28/08/80	40.5	1.00	F	4+	-	0.017	0.002	0.039	-	-	-	0.037	-	-	-	0.018	-	0.015	-	0.013	-	-	-	-	-	0.69
1	28/08/80	46.8	1.05	F	6+	0.001	0.018	0.002	0.082	-	-	0.037	0.823	0.05	-	0.033	1.19	0.001	0.011	-	0.058	0.001	-	-	-	0.44	3.88
1	28/08/80	43.5	1.25	M	5+	-	0.011	0.002	0.088	-	-	0.003	0.132	-	-	-	0.031	-	0.012	-	0.011	-	-	-	-	0.07	3.49
1	28/08/80	42.8	1.30	F	5+	-	0.011	0.003	0.074	-	-	0.002	0.045	-	-	-	0.092	-	0.009	-	0.022	-	-	-	-	0.02	1.05
1	28/08/80	41.0	1.10	F	5+	-	0.010	0.005	0.052	-	-	0.003	0.034	-	-	-	0.021	-	-	-	0.006	-	-	-	-	0.04	1.07
1	28/08/80	40.5	1.10	M	3+	0.001	0.014	0.003	0.058	-	-	0.004	0.053	-	-	0.003	0.009	-	0.005	-	0.006	-	-	-	-	0.03	0.70
1	28/08/80	40.3	1.00	M	4+	-	0.006	0.001	0.060	-	-	0.001	0.040	-	-	-	0.016	-	0.008	-	0.008	-	-	-	-	0.01	0.75
1	02/09/81	41.5	1.33	F		-	0.016	0.001	0.059	-	-	0.001	0.077	-	-	-	0.034	-	-	-	-	-	-	-	0.053	0.02	1.67
1	02/09/81	37.5	1.11	M		-	0.016	0.001	0.067	-	-	0.001	0.136	-	-	-	0.109	-	-	-	0.015	-	-	-	0.070	0.02	2.34
1	02/09/81	38.7	1.03	M		-	0.019	-	0.144	-	-	0.001	0.122	-	-	-	0.060	-	-	-	0.006	-	-	-	0.071	-	1.92
1	02/09/81	41.5	1.14	M		-	0.020	0.002	0.072	-	-	0.003	0.136	-	-	-	0.063	-	-	-	0.012	-	-	-	0.089	0.09	3.37
1	02/09/81	42.5	1.13	F		[-]	0.017	[-]	0.071	[-]	-	[-]	0.133	[-]	-	[-]	0.055	[-]	-	[-]	0.008	[-]	-	[-]	0.079	[-]	2.46
1	03/09/81	38.4	0.95	M		[-]	0.014	[-]	-	[-]	-	[-]	-	[-]	-	[-]	-	[-]	-	[-]	-	[-]	-	[-]	-	0.01	1.15
2	24/06/81	45.0	1.31	F		-	-	-	0.030	-	-	0.001	-	-	-	0.004	0.059	-	-	-	0.007	-	-	-	-	0.14	4.94
3	04/05/82	35.9	0.80	M		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]	
3	04/05/82	36.1	0.84	F		[-]	0.007	[-]	-	[-]	-	[-]	0.038	[-]	-	[-]	0.053	[-]	-	[-]	0.012	[-]	-	[-]	0.005	[-]	1.97
3	04/05/82	29.0	0.39	F		[-]	[0.007]	[0.001]	[-]	[-]	[-]	[-]	[0.029]	[-]	[-]	[-]	[0.040]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[1.23]
3	04/05/82	32.1	0.58	M																							
3	04/05/82	38.0	0.90	M																							
3	04/05/82	39.3	1.10	M		-	0.008	0.001	-	-	-	0.001	0.120	-	-	0.001	0.055	-	-	-	-	-	-	0.002	0.015	0.05	5.60
3	04/05/82	39.5	0.95	M																							
3	04/05/82	39.3	1.09	F																							
3	04/05/82	46.1	1.38	F		[-]	[0.008]	[-]	[-]	[-]	[-]	[0.003]	[0.188]	[-]	[-]	[-]	[0.030]	[-]	[-]	[-]	[-]	[-]	[-]	[0.004]	[0.023]	[0.14]	[10.76]
3	04/05/82	46.3	1.05	F																							
3	04/05/82	43.7	1.55	F		[-]	[0.007]	[-]	[-]	[-]	[-]	[0.002]	[0.056]	[-]	[-]	[0.002]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[0.003]	[0.010]	[0.03]	[4.07]
3	04/05/82	43.6	1.48	F																							

*[ ] samples combined

APPENDIX
Pesticide and PCB Residue Analysis
All results in g/kg (ppm)

SITE LEGEND
1: Myrnam Bridge
2: Lea Park
3: Sturgeon River

RIVER/LAKE: North Saskatchewan River

SPECIES: White Sucker (cont'd)

- is less than 0.0005 mg/kg (ppm)

Blank: no data

SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB		α-BHC		METHOXY-CHLOR		DDE		DDT		DDD		HEPTACHLOR EPOXIDE		DIELDRIN		OXYCHLORDANE		CHLORDANE		PCB	
						muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat
1	04/05/82	43.6	1.38	F		*[																					
1	04/05/82	43.7	1.41	F		-	-	-	-	-	-	0.002	0.041	-	-	-	0.116	-	-	-	0.009	-	-	0.003	-	0.09	4.27
1	04/05/82	43.8	1.27	M																							
1	04/05/82	39.7	1.03	M		-	-	-	-	-	-	0.002	0.109	-	-	-	0.400	-	-	-	0.020	-	-	0.002	-	0.08	5.80
1	04/05/82	40.2	0.92	M		-	0.007	-	-	-	-	0.003	0.137	-	-	-	-	-	-	-	-	-	-	0.004	0.015	0.11	7.87
1	04/05/82	40.5	1.06	M																							
1	04/05/82	42.6	1.20	F																							
1	04/05/82	42.9	1.20	F		-	0.009	-	-	-	-	0.001	0.214	-	-	-	-	-	-	-	-	-	-	0.002	0.023	-	10.81
1	04/05/82	42.8	1.25	M																							
1	04/05/82	43.1	1.31	F		-	0.031	-	-	-	-	0.001	0.090	-	-	0.001	-	-	-	-	-	-	-	0.001	0.192	0.03	3.89
1	04/05/82	42.0	1.20	F																							

APPENDIX
Pesticide and PCB Residue Analysis
All results in g/kg (ppm)

SITE LEGEND
1: Myrnam Bridge
2: Lea Park
3: Sturgeon River

RIVER/LAKE: North Saskatchewan River

SPECIES: Quillback Sucker

- is less than 0.0005 mg/kg (ppm)

Blank: no data

SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB		α-BHC		METHOXY-CHLOR		DDE		DDT		DDD		HEPTACHLOR EPOXIDE		DIELDRIN		OXYCHLORDANE		CHLORDANE		PCB	
						muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat
3	27/05/82	35.2	0.94	M		-	-	-	0.009	-	-	-	0.012	-	-	-	0.035	-	-	-	0.007	-	-	-	-	-	1.21

*[ ] samples combined

APPENDIX
Pesticide and PCB Residue Analysis
All results in mg/kg (ppm)

SITE LEGEND
1: Myrnam Bridge
2: Lea Park
3: Sturgeon River

RIVER/LAKE: North Saskatchewan River

SPECIES: Northern Redhorse Sucker

- is less than 0.0005 mg/kg (ppm)

Blank: no data

SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB		∝BHC		METHOXY-CHLOR		DDE		DDT		DDD		HEPTACHLOR EPOXIDE		DIELDRIN		OXYCHLORDANE		CHLORDANE		PCB	
						muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat
1	28/08/80	40.1	1.60	F	8+	0.003	0.025	0.018	0.075	-	-	0.024	1.27	0.02	-	0.015	0.045	0.002	-	0.006	0.023	0.003	0.007	-	0.159	0.40	4.67
1	28/08/80	35.5	0.80	F	6+	0.002	0.036	0.006	0.056	-	-	0.004	0.054	-	-	0.003	0.046	0.001	0.012	0.002	0.023	-	0.007	-	0.064	0.03	1.20
1	28/08/80	36.6	1.00	M	9+	0.002		0.007		-		0.039		-		0.007		-		0.002		0.003		-		0.69	
1	28/08/80	41.8	1.20	F	9+	-		0.007		-		0.074		0.03		0.029		0.001		0.002		0.001		-		1.01	
1	28/08/80	37.5	0.91	M	6+	0.002		0.011		-		0.004		-		0.006		0.001		0.002		0.001		0.002		0.05	
1	28/08/80	42.1	1.10	F	9+	0.002		0.003		-		0.134		0.09		0.048		-		0.004		0.004		-		1.66	
1	28/08/80	44.5	1.50	F	8+	0.002	0.019	0.002	0.034	-	-	0.046	0.544	0.06	-	0.028	0.407	-	-	0.003	0.020	0.002	0.009	-	0.224	0.90	11.2
1	02/09/81	35.7	0.71	M		0.001	0.025	0.001	-	-	-	0.004	0.061	-	-	-	-	-	-	-	-	-	-	-	-	0.065	2.45
1	03/09/81	39.8	1.19	M		-		-		-		0.007		-		-		-		-		-		-		0.216	
2	24/06/81	39.7	0.88	F	6+	-	-	-	0.078	-	-	-	-	-	-	-	0.019	-	-	-	0.015	-	-	-	-	0.01	0.05
2	24/06/81	34.5	0.62	F		-	-	-	0.041	-	-	-	-	-	-	-	0.012	0.001	-	-	0.026	-	-	-	-	0.04	0.88
2	24/06/81	37.7	0.85	M		-	-	-	0.064	-	-	-	-	-	-	-	0.019	-	-	-	0.012	-	-	-	-	0.02	1.95
2	25/08/81	39.1	1.10	F		0.001	0.029	0.002	0.053	-	-	0.001	0.046	-	-	0.002	-	-	-	-	-	-	-	-	-	0.02	0.63
2	25/08/81	36.1	0.75	M	4+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	25/08/81	38.7	0.88	F		-	0.015	-	0.004	-	-	0.001	0.034	-	-	0.015	-	-	0.012	-	-	-	-	-	-	0.01	0.93
2	25/08/81	34.3	0.61	F		0.001	0.060	-	-	-	-	0.002	0.111	-	-	-	-	-	-	-	-	-	-	-	-	0.05	2.71
2	19/09/81	36.2	0.85	F		0.001	0.034	-	-	-	-	0.001	0.047	-	-	-	-	-	-	-	-	-	-	-	-	0.05	2.10
3	19/05/82	36.9	0.79	M		-	-	0.003	-	-	-	0.001	-	-	-	0.002	-	-	-	-	-	-	-	-	-	0.04	-
3	19/05/82	44.6	1.48	F		[		[		[		[		[		[		[		[		[		[		[	
3	27/05/82	35.8	0.92	F		-	-	0.002	-	-	-	0.003	0.103	-	-	0.002	0.080	-	-	0.001	0.012	-	-	-	-	0.31	7.87
3	27/05/82	35.3	0.80	M		]		]		]		]		]		]		]		]		]		]		]	
3	27/05/82	38.8	1.07	F		[		[		[		[		[		[		[		[		[		[		[	
3	27/05/82	38.8	0.98	F		]		]		]		]		]		]		]		]		]		]		]	
3	02/06/82	38.1	0.90	M		-	-	0.001	0.018	-	-	0.001	0.047	-	-	-	0.055	-	-	-	0.012	-	-	-	0.300	0.01	3.31
3	02/06/82	38.5	1.12	F		]		]		]		]		]		]		]		]		]		]		]	
3	27/05/82	39.3	1.0	F		[		[		[		[		[		[		[		[		[		[		[	
3	02/06/82	39.3	0.99	F		-	-	0.001	0.023	-	-	-	0.056	-	-	[	0.045	-	-	-	0.008	-	-	-	0.311	0.02	3.12
3	02/06/82	39.2	1.18	F		]		]		]		]		]		]		]		]		]		]		]	
3	02/06/82	37.6	1.0	F		[		[		[		[		[		[		[		[		[		[		[	
3	02/06/82	37.2	0.82	M		-	-	0.002	-	-	-	-	0.033	-	-	-	-	-	-	-	-	-	-	-	0.256	0.03	3.53

*[ ] samples combined

APPENDIX
Pesticide and PCB Residue Analysis
All results in ug/kg (ppm)

SITE LEGEND
1: Myrnam Bridge
2: Lea Park
3: Sturgeon River

RIVER/LAKE: North Saskatchewan River

SPECIES: Northern Pike

- is less than 0.0005 mg/kg (ppm)

Blank: no data

SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB		∝BHC		METHOXY-CHLOR		DDE		DDT		DDD		HEPTACHLOR EPOXIDE		DIELDRIN		OXYCHLORDANE		CHLORDANE		PCB	
						muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat
1	28/08/80	45.0	0.69	F	2+	-		-		-		0.002		-		-		-		-		-		-		0.02	
1	28/08/80	41.0	0.43		2+	-		-		-		0.001		-		-		-		-		-		-		0.01	
1	28/08/80	38.9	0.39	M	2+	-		-		-		0.004		-		-		-		-		-		-		0.02	
1	02/09/81	38.0	0.41	M		[*-		[-		[-		[-		[-		[-		[-		[-		[-		[-		[0.01	
1	03/09/81	38.3	0.38	M																							
1	02/09/81	59.3	1.42	F		-	0.015	-	0.019	-	-	-	0.231	-	-	-	0.061	-	-	-	-	-	-	-	0.175	0.01	5.27
2	25/08/81	38.1	0.38	M	1+	-		-		-		-		-		-		-		-		-		-		-	
2	19/09/81	36.7	0.32	M	2+	-	-	-	-	-	-	-	0.022	-	-	-	-	-	-	-	-	-	-	-	-	0.02	0.39
3	04/05/82	38.3	0.44	M		[-	[-	[-	[-	[-	[-	[-	[0.035	[-	[-	[-	[-	[-	[-	[-	[-	[-	[-	[-	[-	[-	[-
3	04/05/82	34.5	0.31	M																							
3	04/05/82	29.6	0.19	M																							
3	04/05/82	40.9	0.59	F		[-	[-	[-	[-	[-	[-	[-	[0.062	[-	[-	[-	[-	[-	[-	[-	[-	[-	[-	[-	[-	[-	[0.74
3	04/05/82	40.3	0.47	F																							
3	04/05/82	42.3	0.51	M																							
3	04/05/82	44.4	0.59	F		[-	[-	[-	[-	[-	[-	[-	[0.054	[-	[-	[-	[-	[-	[-	[-	[-	[-	[-	[-	[-	[-	[1.05
3	04/05/82	46.0	0.67	F																							
3	04/05/82	44.6	0.62	M																							
3	04/05/82	58.9	1.27	M		[	[	[	[	[	[	[	[	[	[	[	[	[	[	[	[	[	[	[	[	[	[
3	04/05/82	55.6	1.22	M																							
3	04/05/82	53.9	1.29	F		[-	[-	[-	[-	[-	[-	[0.001	[0.835	[-	[-	[-	[0.102	[-	[-	[-	[-	[-	[-	[-	[0.700	[0.03	[26.20
3	04/05/82	50.2	0.83	M																							
3	05/05/82	39.6	0.47	M		[	[	[	[	[	[	[	[	[	[	[	[	[	[	[	[	[	[	[	[	[	[
3	05/05/82	40.9	0.51	M		[-	[0.016	[-	[-	[-	[-	[-	[0.061	[-	[-	[-	[-	[-	[-	[-	[-	[-	[-	[-	[0.065	[-	[2.39
3	05/05/82	43.3	0.60	M																							
3	05/05/82	43.3	0.60	M		[-	[-	[-	[-	[-	[-	[-	[0.066	[-	[-	[-	[-	[-	[-	[-	[-	[-	[-	[-	[-	[-	[-
3	05/05/82	43.3	0.61	M																							
3	05/05/82	42.5	0.61	M																							
3	05/05/82	42.5	0.60			[	[-	[	[-	[	[-	[	[0.143	[	[-	[	[-	[	[-	[	[-	[	[-	[	[-	[	[3.56
3	05/05/82	42.5	0.58	M		[-		[-		[-		[-		[-		[-		[-		[-		[-		[-		[-		[-	
3	05/05/82	42.0	0.50	M																							

*[ ] samples combined

APPENDIX
Pesticide and PCB Residue Analysis
All results in mg/kg (ppm)

SITE LEGEND
1: Myrnam Bridge
2: Lea Park
3: Sturgeon River

RIVER/LAKE: North Saskatchewan River

SPECIES: Northern Pike (continued)

- is less than 0.0005 mg/kg (ppm)

Blank: no data

SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB		∝BHC		METHOXY-CHLOR		DDE		DDT		DDD		HEPTACHLOR EPOXIDE		DIELDRIN		OXYCHLORDANE		CHLORDANE		PCB	
						muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat
3	05/05/82	46.3	0.75	F		-		-		-		-		-		-		-		-		-		-		-	
3	05/05/82	45.3	0.62	M		-	-	-	-	-	-	-	0.321	-	-	-	-	-	-	-	-	-	-	-	-	-	5.76
3	05/05/82	47.2	0.82	F																							
3	05/05/82	48.6	0.91	M		-	-	-	-	-	-	-	0.064	-	-	-	-	-	-	-	-	-	-	-	-	-	1.34
3	05/05/82	49.1	0.77	F																							
3	05/05/82	67.8	2.82	F		-	-	-	-	-	-	-	0.310	-	-	-	-	-	-	-	-	-	-	-	0.345	0.01	13.30
3	05/05/82	60.4	1.70	M		-	0.026	-	-	-	-	0.001	0.347	-	-	-	0.444	-	-	-	0.026	-	-	-	-	-	19.47
3	05/05/82	51.4	1.05	M																							
3	05/05/82	40.0	0.49	F		-	-	-	-	-	-	-	0.043	-	-	-	-	-	-	-	-	-	-	-	-	-	1.97
3	05/05/82	39.9	0.46	M																							
3	27/05/82	32.7	4.75	F			-		0.025		-		1.343		-		0.755		-		0.033		-		2.000		31.37
3	27/05/82	77.3	3.45	F			-		-		-		0.280		-		0.110		-		-		-		0.422		13.38
3	27/05/82	55.5	1.40	M			-		-		-		-		-		-		-		-		-		-		-
3	10/05/82	44.1	0.60	M			-		0.022		-		0.067		-		0.036		-		-		-		0.061		2.35
3	10/05/82	66.8	2.42	F			-		0.006		-		0.200		-		0.119		-		0.017		-		0.133		3.25
3	19/05/82	73.7	3.72	F		-	0.077	-	-	-	-	0.001	0.78	-	-	-	0.452	-	-	-	0.038	-	-	-	0.328	0.021	11.98

APPENDIX
Pesticide and PCB Residue Analysis
All results in mg/kg (ppm)

SITE LEGEND
1: Myrnam Bridge
2: Lea Park
3: Sturgeon River

RIVER/LAKE: North Saskatchewan River

SPECIES: Burbot

- is less than 0.0005 mg/kg (ppm)

Blank: no data

SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB		∝BHC		METHOXY-CHLOR		DDE		DDT		DDD		HEPTACHLOR EPOXIDE		DIELDRIN		OXYCHLORDANE		CHLORDANE		PCB	
						muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat
3	05/05/82	60.2	1.20	M		-		-		-		-		-		-		-		-		-		-		0.01	

APPENDIX
Pesticide and PCB Residue Analysis
All results in mg/kg (ppm)

SITE LEGEND
1: Myrnam Bridge
2: Lea Park
3: Sturgeon River

RIVER/LAKE: North Saskatchewan River

SPECIES: Walleye

- is less than 0.0005 mg/kg (ppm)

Blank: no data

SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB		∝BHC		METHOXY-CHLOR		DDE		DDT		DDD		HEPTACHLOR EPOXIDE		DIELDRIN		OXYCHLORDANE		CHLORDANE		PCB	
						muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat
1	28/08/80	43.8	0.79	F	4+	-	0.027	-	0.090	-	-	0.002	0.258	-	-	-	0.103	-	-	-	0.026	-	-	-	0.136	0.03	7.24
1	28/08/80	43.2	0.73	M	4+	-	0.038	0.001	0.087	-	-	0.003	0.459	-	-	0.001	0.115	-	-	-	0.031	-	-	0.001	0.270	0.12	16.4
1	28/08/80	41.6	0.68	F	4+	-	0.034	0.001	0.072	-	-	0.007	0.508	-	-	-	0.132	-	-	-	0.045	-	-	0.003	0.219	0.11	15.4
1	28/08/80	32.0	0.30	F	1+	-		-		-		0.002		-		-		-		-		-		-		0.03	
1	28/08/80	43.4	0.80	F	3+	-	0.033	-	0.132	-	-	0.003	0.342	-	-	-	0.107	-	-	-	0.015	-	0.003	0.001	-	0.08	10.30
1	28/08/80	41.8	0.70		5+	-		0.002		-		0.004		-		0.001		-		-		-		0.001		0.06	
1	28/08/80	41.3	0.69	M	4+	-	0.027	0.001	0.082	-	-	0.002	0.300	-	-	-	0.161	-	-	-	0.036	-	-	-	0.192	0.06	12.0
1	28/08/80	33.6	0.29	I	3+	-		-		-		0.002		-		-		-		-		-		-		0.06	
1	28/08/80	40.5	0.68	M	4+	0.001	0.019	0.001	0.067	-	-	0.002	0.294	-	-	-	0.152	-	-	-	0.044	-	0.006	-	0.142	0.07	8.63
1	28/08/80	45.0	0.96	F	4+	-	0.023	0.001	0.088	-	-	0.001	0.289	-	-	-	0.089	-	-	-	-	-	0.011	-	0.152	0.05	11.2
1	28/08/80	43.8	0.86	F	5+	-	0.023	0.001	0.074	-	-	0.003	0.221	-	-	-	0.052	-	-	-	0.023	-	-	-	0.152	0.07	9.33
1	28/08/80	40.7	0.68	M	3+	-	0.028	0.001	0.054	-	-	0.003	0.398	-	-	-	0.157	-	-	-	0.032	-	-	-	0.231	0.10	16.4
1	28/08/80	42.9	0.84	M	4+	-		0.002		-		0.003		-		-		-		-		-		-		0.08	
1	28/08/80	38.3	0.59	M	3+	-	0.027	0.001	0.077	-	-	0.003	0.412	-	-	-	0.117	-	-	-	0.024	-	-	-	0.195	0.03	11.3
1	28/08/80	40.2	0.63	M	4+	-	0.024	-	0.090	-	-	0.002	0.306	-	-	-	0.081	-	-	-	0.032	-	-	-	0.209	0.06	12.0
1	28/08/80	46.5	0.97	M	4+	-	0.042	-	0.081	-	-	0.003	0.891	-	-	-	0.268	-	-	-	0.055	-	-	-	0.575	0.05	
1	28/08/80	44.4	0.84	M	4+	-	0.026	0.001	0.099	-	-	0.002	0.272	-	-	-	0.093	-	-	-	0.029	-	-	-	0.113	0.06	7.71
1	28/08/80	50.5	1.40	F	5+	-	0.044	0.002	0.081	-	0.056	-	0.139	-	-	-	0.090	-	0.026	-	0.040	-	-	-	0.030	-	2.50
1	28/08/80	38.5	0.56	M	4+	-	0.034	0.002	0.112	-	-	0.005	0.528	-	-	-	0.164	-	-	-	0.041	-	-	-	0.230	0.06	11.8
1	28/08/80	40.2	0.66	M	4	-	0.018	0.001	0.051	-	-	0.003	0.168	-	-	-	0.139	-	-	-	0.027	-	-	-	0.069	0.02	4.86
1	28/08/80	40.8	0.79	M	5+	-	0.028	0.003	0.068	-	-	0.008	0.359	-	-	-	0.034	-	-	-	0.038	-	-	-	0.137	0.07	9.86
1	28/08/80	39.0	0.64	F	4+	-		0.001		-		0.006		-		-		-		-		-		-		0.07	
1	28/08/80	44.6	1.00	F	4+	-	0.017	0.004	0.080	-	-	0.001	0.162	-	-	-	0.093	-	-	-	-	-	-	-	0.069	0.01	4.94
1	28/08/80	49.0	0.63	M	4+	-	0.026	0.001	0.077	-	-	0.002	0.564	-	-	-	0.012	-	-	-	0.025	-	-	-	0.294	0.05	18.1
1	28/08/80	41.4	0.72	M	4+	-	0.025	-	0.056	-	-	0.002	0.396	-	-	-	0.100	-	-	-	0.034	-	-	-	0.222	0.05	14.9
1	28/08/80	39.0	0.64	F	2+	-		-		-		0.003		-		-		-		-		-		-		0.11	
1	28/08/80	46.7	1.03	F	5+		0.029		0.070		-		0.268		-		0.109		-		0.014		-		0.149		9.00
1	28/08/80	40.6	0.68	M	4+	-	0.028	0.001	0.069	-	-	0.002	0.526	-	-	-	0.220	-	-	-	0.031	-	-	-	0.346	0.02	19.1

*[ ] samples combined

APPENDIX
Pesticide and PCB Residue Analysis
All results in mg/kg (ppm)

SITE LEGEND
1: Myrnam Bridge
2: Lea Park
3: Sturgeon River

RIVER/LAKE: North Saskatchewan River

SPECIES: Walleye (continued)

- is less than 0.0005 mg/kg (ppm)

Blank: no data

SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB		α-BHC		METHOXY-CHLOR		DDE		DDT		DDD		HEPTACHLOR EPOXIDE		DIELDRIN		OXYCHLORDANE		CHLORDANE		PCB	
						muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat
1	28/08/80	45.1	0.98	F	5+	-	0.023	-	0.074	-	-	0.002	0.278	-	-	-	0.077	-	-	-	0.025	-	-	-	0.105	0.01	6.39
1	28/08/80	43.6	0.84	F	5+	-	0.021	0.001	0.057	-	-	0.001	0.388	-	-	-	0.099	-	-	-	0.027	-	-	-	0.163	0.03	12.2
1	02/09/81	39.8	0.63	M	5+	-	0.008	-	0.028	-	-	0.004	0.561	-	-	-	0.050	-	-	-	-	-	-	-	0.213	0.03	18.39
1	02/09/81	42.4	0.78	M	5+	-	0.041	-	0.075	-	-	0.008	1.689	-	-	-	0.400	-	-	-	0.054	-	-	-	0.429	0.08	31.68
1	02/09/81	39.7	0.65	M	4+	-	0.035	-	0.079	-	-	-	1.315	-	-	-	-	-	-	-	0.020	-	-	-	0.670	0.12	34.12
1	03/09/81	** 30.4	0.28	I	3+	-	-	-	-	-	-	0.023	0.181	-	-	-	-	-	-	-	-	-	-	-	0.189	0.12	3.70
1	03/09/81	45.5	1.3	M	4+	[-	-	[-	-	[-	-	[-	0.048	-	-	-	-	-	-	-	-	-	-	-	0.070	0.05	1.55
1	03/09/81	38.4	0.52	M	3+		-		-		-		0.137	[-	-	[-	-	[-	-	[-	-	[-	-	[-	0.244	[0.02	5.60
2	24/06/81	50.6	1.3	M	10+	0.001	-	-	0.056	-	-	-	0.166	-	-	-	0.094	-	-	-	0.027	-	-	-	0.272	]	7.62
3	25/08/81	42.7	0.82	M	5+	-	0.031	-	-	-	-	-	0.272	-	-	-	0.086	-	-	-	0.015	-	-	-	0.508	0.07	4.59
2	25/08/81	45.2	0.92		5+	-	0.030	-	0.016	-	-	-	0.404	-	-	-	-	-	-	-	-	-	-	-	-	0.07	15.73
2	25/08/81	39.4	0.58	F	4+	-	0.030	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02	5.70
2	18-19/09/81	46.2	1.08	F	6+	-	0.028	-	0.035	-	-	-	0.242		-		0.028		-		0.008		-		0.212	0.02	9.49
2	18-19/09/81	27.9	1.20	F	7+	-	0.033	-	0.046	-	-	-	0.258	-	-	-	0.042	-	-	-	0.011	-	-	-	0.218	-	9.16
2	18-19/09/81	43.8	1.10	F	5+	-		-		-		0.001		-		-		-		-		-		-		0.04	
2	18-19/09/81	40.7	0.68	M	5+	-		-		-		0.004		-		-		-		-		-		-		0.17	
2	18-19/09/81	43.1	0.85	M	4+	-		-		-		0.001		-		-		-		-		-		-		0.16	
2	18-19/09/81	43.5	0.72	F	4+	-	[-	-	[-	-	[-	0.002		-	[-	-	[-	-	[-	-	[-	-	[-	-	[-	0.06	[
2	18-19/09/81	29.3	0.39	I	2+	-	-	-	-	-	-	-	0.115	-	-	-	-	-	-	-	-	-	-	-	0.139	0.01	1.39
2	18-19/09/81	30.6	0.35	I	2+	-	]	-	]	-	]	-	]	-	]	-	]	-	]	-	]	-	]	-	]	]	]
3	04/05/82	37.1	0.50	M		[	[	[	[	[	[	[	[	[	[	[	[	[	[	[	[	[	[	[	[
3	04/05/82	41.3	0.75	M		-	-	-	-	-	-	0.003	0.998	-	-	-	-	-	-	-	-	-	-	0.004	1.156	0.10	37.55
3	04/05/82	43.0	0.77	F		]	]	]	]	]	]	]	]	]	]	]	]	]	]	]	]	]	]	]	]	]	]
3	05/05/82	38.2	0.54	M		[-	[-	[-	[-	[-	[-	0.005	0.135	[-	[-	[-	[-	[-	[-	[-	[-	[-	[-	0.006	0.244	0.24	8.74
3	05/05/82	41.2	0.52	M		]	]	]	]	]	]	]	]	]	]	]	]	]	]	]	]	]	]	]	]	]	]
3	10/05/82	45.6	1.16	F			[-		[-		[-		0.716		[-		0.114		[-		0.019		[-		1.250		[
3	10/05/82	39.9	0.61	M			]		]		]		]		]		]		]		]		]		]		45.60
3	27/05/82	35.3	0.49	F		[-	[-	[-	[-	[-	[-	0.001	0.238	[-	[-	[-	[-	[-	[-	[-	[-	[-	[-	[-	0.337	0.02	13.31
3	02/06/82	29.7	0.28	M		]	]	]	]	]	]	]	]	]	]	]	]	]	]	]	]	]	]	]	]	]	]

*[ ] samples combined

** sample contains some fat from next sample (45.5, 1.3) to to make up 1 g sample for analysis.

SITE LEGEND
1: Myrnam Bridge
2: Lea Park
3: Sturgeon River

APPENDIX
Pesticide and PCB Residue Analysis
All results in mg/kg (ppm)

RIVER/LAKE: North Saskatchewan River

SPECIES: Walleye (continued)

- is less than 0.0005 mg/kg (ppm)

Blank: no data

SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB		∝BHC		METHOXY-CHLOR		DDE		DDT		DDD		HEPTACHLOR EPOXIDE		DIELDRIN		OXYCHLORDANE		CHLORDANE		PCB	
						muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat
3	27/05/82	42.5	0.75	M		-	-	-	0.010	-	-	0.001	0.550	-	-	-	0.210	-	-	-	0.015	-	-	-	0.844	0.13	28.34
3	27/05/82	47.0	1.18	F		-	-	-	0.017	-	-	0.003	0.665	-	-	-	0.210	-	-	-	0.016	-	-	-	1.133	0.57	30.63
3	05/05/82	43.5	0.86	F		-		-		-		0.002		-		-		-		-		-		0.001		0.05	
3	05/05/82	30.4	0.29	M		[-]		[-]		[-]		[0.001]		[-]		[-]		[-]		[-]		[-]		[-]		[0.012]	
3	02/06/82	28.5	0.22	M		[-]		[-]		[-]		[0.004]		[-]		[-]		[-]		[-]		[-]		[-]		[0.026]	
3	19/05/82	35.9	0.52	M		[-]		[-]		[-]		[0.001]		[-]		[-]		[-]		[-]		[-]		[-]		[-]	
3	19/05/82	30.1	0.28	I		[-]		[-]		[-]		[0.004]		[-]		[-]		[-]		[-]		[-]		[-]		[0.026]	
3	19/05/82	40.3	0.64	M		[-]		[-]		[-]		[0.001]		[-]		[-]		[-]		[-]		[-]		[-]		[-]	
3	19/05/82	42.0	0.72	M		[-]		[-]		[-]		[0.001]		[-]		[-]		[-]		[-]		[-]		[-]		[-]	

SITE LEGEND
1: Myrnam Bridge
2: Lea Park
3: Sturgeon River

APPENDIX
Pesticide and PCB Residue Analysis
All results in mg/kg (ppm)

RIVER/LAKE: North Saskatchewan River

SPECIES: Sauger (continued)

- is less than 0.0005 mg/kg (ppm)

Blank: no data

SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB		∝BHC		METHOXY-CHLOR		DDE		DDT		DDD		HEPTACHLOR EPOXIDE		DIELDRIN		OXYCHLORDANE		CHLORDANE		PCB	
						muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat
3	19/05/82	33.8	0.44	F		-		-		-		-		-		-		-		-		-		-		0.01	
3	19/05/82	34.4	0.44	F		-	0.022	-	-	-	-	0.003	0.381	-	-	-	0.071	-	-	-	0.013	-	-	-	0.150	0.04	6.04

*[ ] samples combined

APPENDIX
Pesticide and PCB Residue Analysis
All results in mg/kg (ppm)

SITE LEGEND
1: Red Deer River Junction

RIVER/LAKE: Red Deer River

SPECIES: Sauger

- is less than 0.0005 mg/kg (ppm)

Blank: no data

SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB		α-BHC		METHOXY-CHLOR		DDE		CDT		DDD		HEPTACHLOR EPOXIDE		DIELDRIN		OXYCHLORDANE		CHLORDANE		PCB	
						muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat
1	06/10/81	34.6	0.43	F	5-	-	0.020	-	0.057	-	-	-	0.298	-	-	-	-	-	0.003	-	0.008	-	-	-	0.138	-	4.55
1	06/10/81	39.7	0.68	F	7+	-	0.022	-	0.052	-	-	0.001	0.096	-	-	-	-	-	0.005	-	0.008	-	-	-	0.196	-	8.35
1	06/10/81	56.4	1.02	F	10+	-	0.016	0.001	0.048	-	-	0.002	0.180	-	-	-	-	-	0.004	-	0.006	-	-	0.001	0.084	0.02	3.26
1	06/10/81	35.7	0.49	F	4+	-	0.019	0.001	0.051	-	-	0.001	0.213	-	-	-	-	-	0.002	-	0.005	-	-	-	0.162	0.01	3.88
1	06/10/81	36.0	0.46	F	5+	-	0.009	0.001	0.043	-	-	0.004	0.297	-	-	-	0.015	-	-	-	0.010	-	-	0.002	0.129	0.05	4.15
1	06/10/81	36.8	0.55	F	5+	-	0.017	0.001	0.053	-	-	0.002	0.219	-	-	-	0.015	-	-	-	0.005	-	-	-	0.108	0.02	3.84
1	06/10/81	40.5	0.68	F	5+	-	0.013	-	0.033	-	-	0.002	0.307	-	-	-	0.023	-	0.002	-	0.005	-	-	-	0.153	0.05	5.90
1	06/10/81	30.3	0.30	M	4+	-	0.013	0.001	0.040	-	-	0.002	0.233	-	-	-	-	-	-	-	0.016	-	-	0.001	0.116	0.02	4.25
1	06/10/81	34.9	0.43	F	4+	-		-		-		0.002		-		-		-		-		-		0.001		0.02	
1	06/10/81	36.6	0.43	M	6+	-	0.019	-	0.049	-	-	0.004	0.560	-	-	0.002	0.050	-	-	0.001	0.008	-	-	0.002	0.337	0.05	9.84
1	06/10/81	34.9	0.37	M	5+	-	0.012	0.001	0.051	-	-	0.001	0.246	-	-	-	0.028	-	-	-	0.008	-	-	0.001	0.180	0.01	4.39
1	06/10/81	42.5	0.82	F	6+	-	0.014	-	0.049	-	-	0.001	0.131	-	-	-	0.018	-	-	-	0.005	-	-	-	0.069	-	6.18
1	06/10/81	38.2	0.57	F	5+	-	0.020	0.001	0.052	-	-	0.002	0.130	-	-	-	0.015	-	0.003	-	0.010	-	-	0.001	0.078	0.02	4.04
1	06/10/81	32.2	0.38	F	4+	-	0.015	-	0.060	-	-	0.001	0.137	-	-	-	0.006	-	-	-	0.003	-	-	-	0.073	-	5.23
1	06/10/81	35.7	0.49	F	4+	-	0.018	0.001	0.059	-	-	0.001	0.127	-	-	-	0.008	-	-	-	0.005	-	-	-	0.071	-	5.13
1	06/10/81	32.8	0.36	F	4+	-	0.019	0.001	0.055	-	-	0.004	0.141	-	-	-	0.015	-	0.002	-	0.008	-	-	0.001	0.074	0.04	5.22
1	06/10/81	37.0	0.60	F	6+	-	0.018	0.001	0.053	-	-	0.004	0.129	-	-	-	0.015	-	0.003	-	0.007	-	-	0.001	0.074	0.05	4.97
1	06/10/81	37.6	0.52	M	5+	-	0.024	-	0.056	-	-	0.004	0.688	-	-	0.001	0.033	-	0.002	-	0.008	-	-	0.001	0.368	0.06	15.4
1	06/10/81	30.1	0.32	M	4+	-	0.011	-	0.044	-	-	0.003	0.109	-	-	-	0.008	-	-	-	0.003	-	-	0.001	0.046	0.03	3.28
1	06/10/81	38.2	0.64	F	4+	-	0.019	0.001	0.060	-	-	0.005	0.263	-	-	-	0.015	-	-	-	0.004	-	-	0.002	0.150	0.06	4.08
1	06/10/81	32.7	0.32	M	6+	-	0.007	-	0.043	-	-	0.001	0.130	-	-	-	-	-	-	-	-	-	-	-	0.129	-	2.03
1	06/10/81	37.2	0.52	F		[-]*	[0.017]*	[-]*	[-]*	[-]*	[-]*	[0.001]*	[0.115]*	[-]*	[-]*	[-]*	[-]*	[-]*	[-]*	[-]*	[-]*	[-]*	[-]*	[-]*	[0.189]*	[0.01]*	[4.20]*
1	06/10/81	36.8	0.51	F																							

*[ ] samples combined

APPENDIX
Pesticide and PCB Residue Analysis
All results in g/kg (ppm)

SITE LEGEND
1: Myrnam Bridge
2: Lea Park
3: Sturgeon River

RIVER/LAKE: North Saskatchewan River

SPECIES: Sauger

- is less than 0.0005 mg/kg (ppm)

Blank: no data

SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB		∝BHC		METHOXY-CHLOR		DDE		DDT		DDD		HEPTACHLOR EPOXIDE		DIELDRIN		OXYCHLORDANE		CHLORDANE		PCB	
						muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat
1	28/08/80	41.6	0.60	M	5+	-		0.001		-		0.008		-		-		-		-		-		-		0.19	
1	28/08/80	38.8	0.5	F	4+	-		-		-		0.002		-		-		-		-		-		-		0.01	
1	28/08/80	35.7	0.35	M	5+	-		0.001		-		0.003		-		-		-		-		-		-		0.05	
1	28/08/80	38.4	0.50	F	5+	-	0.035	0.001	0.064	-	-	0.007	0.734	-	-	-	0.133	-	-	-	0.038	-	-	-	0.311	0.06	23.1
1	28/08/80	39.8	0.50	F	3+	-		-		-		0.002		-		-		-		-		-		-		0.06	
1	02/09/81	36.2	0.44	F	5+	[-]*		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]	
1	03/09/81	38.8	0.51	F	5+																						
1	03/09/81	31.4	0.25	M	3+	[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[0.01]	
1	02/09/81	30.8	0.28	M	3+																						
1	03/09/81	30.0	0.23	F	3+	[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[0.01]	
1	03/09/81	28.4	0.20	M	3+																						
1	02/09/81	40.7	0.62	M	5+	-	0.029	-	0.006	-	-	0.004	0.408	-	-	-	-	-	-	-	-	-	-	-	0.682	0.11	6.13
1	02/09/81	37.2	0.50	F	4+	-	0.017	-	-	-	-	0.001	0.182	-	-	-	-	-	-	-	-	-	-	-	0.263	-	2.15
1	02/09/81	36.2	0.44	F	5+		0.018		0.003		-		0.193		-		-		-		-		-		-		1.66
1	02/09/81	40.1	0.58	F	7+	-	0.029	-	-	-	-	0.001	0.311	-	-	-	-	-	-	-	-	-	-	-	0.421	0.03	3.43
1	02/09/81	38.9	0.56	F	5+	-	0.018	0.001	-	-	-	-	0.128	-	-	-	-	-	-	-	-	-	-	-	0.170	-	2.60
1	02/09/81	39.0	0.61	F	5+	-	0.013	-	-	-	-	0.001	0.162	-	-	-	-	-	-	-	-	-	-	-	0.194	-	4.47
2	25/08/81	30.3	0.25	M	4+	-	[0.03]	-	[-]	-	[-]	-	[0.123]	-	[-]	-	[0.068]	-	[-]	-	[0.008]	-	[-]	-	[0.177]	-	[1.09]
2	18/09/81	33.7	0.40	F	5+	-	[-]	-	[-]	-	[-]	-	[-]	-	[-]	-	[0.031]	-	[-]	-	[-]	-	[-]	-	[0.218]	0.01	[2.47]
2	25/08/81	25.7	0.19	M			[-]		[-]		[-]		[0.149]		[-]		[0.031]		[-]		[-]		[-]	0.003	[0.218]	0.093	[2.47]
2	18-19/09/81	33.6	0.38	M	4+	-	[-]	-	[-]	-	[-]	-	[0.149]	-	[-]	-	[0.031]	-	[-]	-	[-]	-	[-]	-	[0.218]	0.01	[2.47]
2	25/08/81	35.9	0.41	M		-	-	-	-	-	-	-	0.272	-	-	-	-	-	-	-	-	-	-	-	0.299	0.01	3.92
2	25/08/81	35.9	0.50	F	5+	-	0.043	-	-	-	-	-	0.146	-	-	-	-	-	0.048	-	0.026	-	-	-	0.158	-	3.60
2	25/08/81	37.7	0.49	M	4+	-	-	0.001	0.007	-	-	-	0.539	-	-	-	0.075	-	-	-	-	-	-	-	0.344	0.04	19.11
2	25/08/81	38.1	0.50	M		-	-	-	0.007	-	-	0.022	4.824	-	-	0.001	-	-	0.081	-	-	-	-	-	-	0.77	104.01
2	25/08/81	32.4	0.32	M		-	-	-	-	-	-	0.008	1.496	-	-	-	-	-	-	-	-	-	-	-	-	0.20	21.13
2	25/08/81	38.9	0.54	F	6+	-	-	-	-	-	-	0.001	0.172	-	-	-	0.084	-	-	-	-	-	-	-	0.225	0.007	1.29
2	18-19/09/81	35.6	0.47	F	5+	-	0.020	-	0.042	-	-	-	0.149	-	-	-	-	-	-	-	-	-	-	-	0.138	0.01	4.80
3	04/05/82	32.8	0.35	M		-	0.005	-	-	-	-	0.006	1.577	-	-	-	-	-	-	-	-	-	-	0.003	1.36	0.08	34.11
3	04/05/82	31.9	0.36	M		-	-	-	-	-	-	0.004	0.878	-	-	-	-	-	-	-	-	-	-	-	0.746	0.123	23.01

*[ ] samples combined

** Lindane:Fat:0.008

APPENDIX
Pesticide and PCB Residue Analysis
All results in µg/kg (ppm)

SITE LEGEND
1: Red Deer River Junction

RIVER/LAKE: Red Deer River

SPECIES: Goldeye

- is less than 0.0005 mg/kg (ppm)

Blank: no data

SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB		∝BHC		METHOXY-CHLOR		DDE		DDT		DDD		HEPTACHLOR EPOXIDE		DIELDRIN		OXYCHLORDANE		CHLORDANE		PCB	
						muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat
1	06/10/81	34.8	0.58	F		* -	-	0.003	-	-	-	0.001	0.027	-	-	0.001	-	0.002	-	0.001	0.016	-	-	-	-	0.05	-
1	06/10/81	34.8	0.55	F																							
1	06/10/81	34.2	0.58	F		-	0.028	0.009	-	-	-	-	-	-	-	0.002	-	0.005	0.044	0.003	0.036	-	-	-	-	0.05	-
1	06/10/81	29.3	0.31	M		0.001	0.009	0.002	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	06/10/81	32.1	0.44	F																							
1	06/10/81	32.7	0.48	M		-	0.005	0.003	0.015	-	-	-	-	-	-	-	-	0.002	-	0.001	-	-	-	-	-	-	-
1	06/10/81	32.3	0.44	M																							
1	06/10/81	33.2	0.58	M		0.001	0.008	0.003	0.016	-	-	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04	-
1	06/10/81	33.3	0.50	F																							
1	06/10/81	35.9	0.63	F		0.001	0.008	0.003	0.016	-	-	0.001	-	-	-	-	-	0.002	0.012	0.001	-	-	-	-	-	-	-
1	06/10/81	36.3	0.62	F																							
1	06/10/81	36.8	0.80	F		-		0.003		-		0.001		-		-		0.007		0.003		-		-		-	
1	06/10/81	38.7	0.71	F																							
1	06/10/81	26.1	0.23	M			-		0.002		-		0.029		-		-		-		-		-		-		0.01
1	06/10/81	26.5	0.25	F																							
1	06/10/81	31.5	0.38	M	44	0.001	0.029	0.002	0.044	-	-	0.003	0.076	-	-	0.001	0.006	-	-	-	0.001	-	-	-	0.028	0.02	1.05

*[ ] samples combined

APPENDIX
Pesticide and PCB Residue Analysis
All results in mg/kg (ppm)

SITE LEGEND
1: Red Deer River Junction

RIVER/LAKE: Red Deer River

SPECIES: Lake Whitefish

- is less than 0.0005 mg/kg (ppm)

Blank: no data

SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB		α-BHC		METHOXY-CHLOR		DDE		DDT		DDD		HEPTACHLOR EPOXIDE		DIELDRIN		OXYCHLORDANE		CHLORDANE		PCB	
						muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat
1	06/10/81	39.5	1.11	M	9+	0.003	0.025	0.012	0.052	-	-	0.027	0.123	-	-	0.009	-	-	-	0.003	0.004	-	-	0.008	0.180	0.34	5.25
1	06/10/81	36.0	0.84	M	4+	0.002	0.021	0.006	0.055	-	-	0.012	0.053	-	-	0.003	-	-	-	0.001	0.006	-	-	0.006	0.12	0.15	3.56
1	06/10/81	27.0	0.34	F	2+	-	0.014	0.002	0.053	-	-	0.003	0.030	-	-	-	-	-	-	-	-	-	-	-	-	0.04	1.28
1	06/10/81	41.1	0.62	F	3+	0.001	0.011	0.003	0.032	-	-	0.005	0.030	-	-	0.001	-	-	-	-	-	-	-	0.002	0.043	0.06	1.75
1	06/10/81	22.2	0.17	F	2+	-	0.014	0.002	0.043	-	-	0.003	0.079	-	-	-	-	-	-	-	-	-	-	-	0.042	0.04	2.06
1	06/10/81	35.2	0.78	F	4+	0.001	0.015	0.006	0.043	-	-	0.010	0.044	-	-	0.003	-	-	-	-	-	-	-	0.004	0.050	0.14	2.19
1	06/10/81	23.5	0.20	F	3+	-	0.011	0.003	0.051	-	-	0.002	0.025	-	-	-	-	-	-	-	-	-	-	0.001	0.018	0.03	1.47
1	06/10/81	22.5	0.15	M	2+	-	*	0.001		-		0.002		-		-		-		-		-		0.001		0.02	
1	06/10/81	21.3	0.13	F	2+	-	0.010	0.002	0.038	-	-	0.003	0.025	-	-	-	-	-	-	-	-	-	-	-	-	0.04	1.18
1	06/10/81	30.8	0.56	F	3+	0.001		0.004		-		0.003		-		-		-		-		-		0.001		0.04	
1	06/10/81	17.1	0.08	M	1+																						
1	06/10/81	21.2	0.15	I	2+		0.007		0.041		-		0.022		-		-		-		-		-		-		-
1	06/10/81	18.6	0.09	I	1+		0.002		0.018		-		-		-		-		-		-		-		-		-
1	06/10/81	34.0	0.62	M		-	0.031	0.008	-	-	-	0.014	0.144	-	-	0.004	-	-	-	0.001	-	-	-	0.004	-	0.21	5.45
1	06/10/81	36.3	0.82	M																							
1	06/10/81	40.5	1.98	F		-	-	0.003	-	-	-	0.007	0.065	-	-	0.003	-	-	-	-	-	-	-	0.004	-	0.12	3.66
1	06/10/81	39.1	1.20	F																							
1	06/10/81	25.8	0.22			-		0.002		-		0.002		-		-		-		-		-		0.001		0.04	
1	06/10/81	24.5	0.21																								
1	06/10/81	22.5	0.18			-		0.001		-		0.001		-		-		-		-		-		-		0.03	
1	06/10/81	39.8	1.21	F		0.002	0.020	0.002	-	-	-	0.005	0.054	-	-	-	-	-	-	-	-	-	-	-	0.111	0.17	2.69

*[ ] samples combined

APPENDIX
Pesticide and PCB Residue Analysis
All results in mg/kg (ppm)

SITE LEGEND
1: Red Deer River Junction

RIVER/LAKE: Red Deer River

SPECIES: Longnose Sucker

- is less than 0.0005 mg/kg (ppm)

Blank: no data

SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB		=BHC		METHOXY-CHLOR		DDE		DDT		DDD		HEPTACHLOR EPOXIDE		DIELDRIN		OXYCHLORDANE		CHLORDANE		PCB	
						muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat
1	06/10/81	46.9	1.55	F		-	0.022	0.002	-	-	-	0.005	0.119	-	-	0.002	-	-	-	-	-	-	-	-	0.178	0.152	5.34
1	06/10/81	45.1	1.20	F		0.001	0.023	0.002	-	-	-	0.001	0.076	-	-	-	-	-	-	-	-	-	-	0.002	0.139	0.04	2.52
1	06/10/81	42.2	1.17	F	5+	0.001	0.015	0.005	0.055	-	-	0.004	0.022	-	-	-	-	-	0.004	0.001	0.010	-	-	0.001	0.033	-	-
1	06/10/81	42.8	1.20	F	4+	0.001	0.008	0.003	0.051	-	-	0.003	0.021	-	-	-	-	-	-	-	0.002	-	-	-	0.019	-	-

APPENDIX
Pesticide and PCB Residue Analysis
All results in mg/kg (ppm)

SITE LEGEND
1: Red Deer River Junction

RIVER/LAKE: Red Deer River

SPECIES: Northern Pike

- is less than 0.0005 mg/kg (ppm)

Blank: no data

SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB		=BHC		METHOXY-CHLOR		DDE		DDT		DDD		HEPTACHLOR EPOXIDE		DIELDRIN		OXYCHLORDANE		CHLORDANE		PCB	
						muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat
1	06/10/81	49.8	0.98	F		-	-	-	0.009	-	-	-	0.154	-	-	-	-	-	-	-	-	-	-	-	0.294	-	5.50
1	06/10/81	47.9	0.80	F		-	0.001	-	0.009	-	-	0.001	0.100	-	-	-	-	-	-	-	-	-	-	-	0.133	0.01	1.82
1	06/10/81	46.2	0.78	F	3+	-	0.014	-	0.112	-	-	-	0.079	-	-	-	-	-	-		0.004	-	-	-	0.068	-	2.33

APPENDIX
Pesticice and PCB Residue Analysis
All results in ug/kg (ppm)

SITE LEGEND
1: Red Deer River Junction

RIVER/LAKE: Red Deer River

SPECIES: Northern Redhorse Sucker

- is less than 0.0005 mg/kg (ppm)

Blank: no data

SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB		∝BHC		METHOXY-CHLOR		DDE		DDT		DDD		HEPTACHLOR EPOXIDE		DIELDRIN		OXYCHLORDANE		CHLORDANE		PCB	
						muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat
1	06/10/81	41.0	1.04	M	9+	0.001	0.020	0.003	0.048	-	-	0.026	0.593	-	-	0.003	-	-	-	-	-	-	-	-	-	0.34	9.75
1	06/10/81	40.5	0.88	F	7+	-	0.008	0.001	0.015	-	-	0.052	0.773	-	-	0.006	0.067	-	-	-	-	-	-	-	-	0.720	15.9

APPENDIX
Pesticide and PCB Residue Analysis
All results in ug/kg (ppm)

SITE LEGEND
1: Red Deer River Junction

RIVER/LAKE: Red Deer River

SPECIES: White Sucker

- is less than 0.0005 mg/kg (ppm)

Blank: no data

SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB		∝BHC		METHOXY-CHLOR		DDE		DDT		DDD		HEPTACHLOR EPOXIDE		DIELDRIN		OXYCHLORDANE		CHLORDANE		PCB	
						muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat	muscle	fat
1	06/10/81	41.9	1.10	F		[-]	[0.021]	[-]	[-]	[-]	[-]	[-]	[0.105]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[0.675]	[-]	[0.01]
1	06/10/81	42.4	1.18	F		[-]	[0.018]	[-]	[0.006]	[-]	[-]	[-]	[0.045]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[0.300]	[-]	[0.53]
1	06/10/81	41.0	1.16	F		[-]		[0.001]		[-]		[0.001]		[-]		[-]		[-]		[-]		[-]		[-]		[0.11]	
1	06/10/81	40.3	1.12	F		[-]	0.023	[-]	0.004	[-]	-	[-]	0.055	[-]	-	[-]	-	[-]	-	[-]	-	[-]	-	[-]	0.375	[-]	2.08
1	06/10/81	38.0	0.80	F		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]	
1	06/10/81	22.1	1.20	F		[-]	0.018	[-]	-	[-]	-	[-]	0.052	[-]	-	[-]	-	[-]	-	[-]	-	[-]	-	[-]	-	[-]	1.54
1	06/10/81	39.7	0.85	F		[-]	0.009	[-]	-	[-]	-	[-]	-	[-]	-	[-]	-	[-]	-	[-]	-	[-]	-	[-]	-	[-]	-
1	06/10/81	39.3	1.00	F		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]	
1	06/10/81	34.2	0.60	F		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]	
1	06/10/81	35.9	0.71	M		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]		[-]	
1	06/10/81	46.0	1.38	F		-	-	-	-	-	-	0.001	0.033	-	-	-	-	-	-	-	-	-	-	-	-	0.05	1.75

SITE LEGEND
1: Red Deer River Junction

APPENDIX
Pesticide and PCB Residue Analysis
All results in ug/kg (ppm)

RIVER/LAKE: Red Deer River

SPECIES: Burbot

- is less than 0.0005 mg/kg (ppm)

Blank: no data

SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB muscle	HCB fat	∝BHC muscle	∝BHC fat	METHOXY-CHLOR muscle	METHOXY-CHLOR fat	DDE muscle	DDE fat	DDT muscle	DDT fat	DDD muscle	DDD fat	HEPTACHLOR EPOXIDE muscle	HEPTACHLOR EPOXIDE fat	DIELDRIN muscle	DIELDRIN fat	OXYCHLORDANE muscle	OXYCHLORDANE fat	CHLORDANE muscle	CHLORDANE fat	PCB muscle	PCB fat
1	06/10/81	63.2	1.19	F		-		-		-		0.001		-		-		-		-		-		-		0.01	
1	06/10/81	40.0	0.30	F		[-		[-		[-		[-		[-		[-		[-		[-		[-		[-		[-	
1	06/10/81	39.2	0.30	M		[-		[-		[-		[-		[-		[-		[-		[-		[-		[-		[-	
1	06/10/81	49.5	0.81	F		[-		[-		[-		[-		[-		[-		[-		[-		[-		[-		[-	
1	06/10/81	43.1	0.45	M		[-		[-		[-		[-		[-		[-		[-		[-		[-		[-		[-	
1	06/10/81	60.2	1.25	F		[-		[-		[-		[-		[-		[-		[-		[-		[-		[-		[-	
1	06/10/81	58.4	1.18	F		[-		[-		[-		[-		[-		[-		[-		[-		[-		[-		[-	
1	06/10/81	58.0	1.16	F		[-		[-		[-		[-		[-		[-		[-		[-		[-		[-		[-	
1	06/10/81	57.1	1.00	M		[-		[-		[-		[-		[-		[-		[-		[-		[-		[-		[-	

SITE LEGEND
1: Red Deer River Junction

APPENDIX
Pesticide and PCB Residue Analysis
All results in ug/kg (ppm)

RIVER/LAKE: Red Deer River

SPECIES: Walleye

- is less than 0.0005 mg/kg (ppm)

Blank: no data

SITE	DATE	FK LG (cm)	WT (kg)	SEX	AGE	HCB muscle	HCB fat	∝BHC muscle	∝BHC fat	METHOXY-CHLOR muscle	METHOXY-CHLOR fat	DDE muscle	DDE fat	DDT muscle	DDT fat	DDD muscle	DDD fat	HEPTACHLOR EPOXIDE muscle	HEPTACHLOR EPOXIDE fat	DIELDRIN muscle	DIELDRIN fat	OXYCHLORDANE muscle	OXYCHLORDANE fat	CHLORDANE muscle	CHLORDANE fat	PCB muscle	PCB fat
1	06/10/81	34.1	0.44	F	3+	-	0.008	-	0.010	-	-	0.001	0.119	-	-	-	-	-	-	-	-	-	-	-	0.039	-	1.88

*[ ] sample combined